BUEF 81

SUN TIMES

AUGUST, 1957

Construction Methods AND EQUIPMENT

In Chicago, caisson digger sinks 40-in. foundation shafts 115 ft through clay and hardpan. . . p2

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A Specialist helps you select the wire rope best for your job

You can depend on your Yellow Strand distributor for recommending the right size and type of wire rope — and for ample stocks on hand.

... always on hand

He knows exactly the rope to best fit your equipment for greatest wire rope service. He maintains stocks of standard strength Yellow Strand, Yellow Strand "POWERSTEEL" and Yellow Strand Flattened Strand to promptly supply your needs.

Add to that the extra qualities of wear resistance, shock resistance and long life manufactured into Yellow Strand products and you have a hard-to-beat combination.

Wherever your job may be Yellow Strand is near at hand. Distributors and factory warehouses are located throughout the entire U.S.A. Call them for the service of an expert, and longer rope life.

Where you see Yellow Strand at work, you'll see wire rope records of long life and dependability. Steady, day after day performance proves Yellow Strand's toughness, ability to "take" shock and wear of heavy loads.

Yellow Strand

BRODERICK & BASCOM ROPE CO.

Manufacturers of Wire Rope for over 80 Years

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B.F. Goodrich



All-Nylon B.F.Goodrich tires give over 4 years' service to highway excavator

Gasparini Excavating Co., Inc., of Peckville, Pennsylvania, does highway and heavy construction work. Here the company's equipment is at work on the Pennsylvania Turnpike, hauling giant loads over rock-strewn roads. For this rugged work, the company uses B.F. Goodrich FLEX-RITE nylon tires, reports many give over 4 years' service, including 2 retreads.

"B.F.Goodrich all-nylon tires have minimized breakdowns, impact breaks and other cost and time-consuming delays," writes President Gene Gasparini. "They help us give maximum contract performance in the shortest contract period."

B.F. Goodrich tires are built with FLEX-RITE nylon cords. FLEX-RITE nylon cords withstand double the im-

pact of other cord materials, resist heat blowouts and flex breaks. Result: more retreadable B.F.Goodrich tires!

Your B.F. Goodrich dealer has a complete line of tires for every off-the-road job, including the new Rock Service Tubeless or tube-type (far left) for mining, quarrying and dirt-moving jobs. And he offers expert, on-the-job tire service. See him today or write B.F. Goodrich Tire Co., A Division of The B.F. Goodrich Co., Akron 18, Ohio.

Specify B. F. Goodrich tires when ordering new equipment





B.F.Goodrich

Your B. F. Goodrich dealer is listed under Tires in the Yellow Pages of your phone book

WET JOBS

BRIDGE PIER COFFERDAM

Winona, Minn.

Contractor: James Construction Co.



BEFORE DEWATERING. Earth cofferdam is shown around damaged and tilted center pier of bridge which had been washed away by Mississippi Spring floods. Griffin Wellpoint system (see photo, right) has 640-ft perimeter.



WITHIN 12 HRS, the 2 pumps have brought water below subgrade, wresting 5000 gal per min from the very coarse sand and gravel.

In Installation, the wellpoints on this job had to be driven the last few feet, through gravel. Fortunately, Griffin's is the only point specifically designed for driving as well as jetting. Contractor was thus enabled to "breeze through" what might otherwise have proved a big headache.

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y. Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Terente Montreal Halifas,

Construction Methods EQUIPMENT

AUGUST, 1957

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ROBERT F. BOGER

Editor

HENRY T. PEREZ

Managing Editor

ROSS HAZELTINE

Associate Editors
New York: ALBERT C. SMITH

ANDREW BORACCI

L. L. WISE V. B. SMITH

Washington:
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San Francisco:

New York: FRANK W. CORRIGAN JAMES G. RIPLEY

Presentation Editor

n Editor
JOSEPH J. FRIES

Assistant: DOLORES MULLIGAN

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PEGGY HAMILL

Business News

Manager: ELSIE EAVES Editor: JAMES H. WEBBER

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On the Cover

Does that rig alongside the HD-6G tractor shovel look unusual? Probably does, for it's a French Benoto machine with which Chicago's Lake States Engineering Co. is sinking caissons. For full story, see p 58.

Prestressed Concrete

Reprints of the CM&E special report on techniques and equipment for prestressing concrete now are available. Single copies, 35¢; 10 copies or more, 25¢ each. Address orders to: The Editor, CM&E, 330 W. 42nd St., New York 36, N.Y.

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LABYRINTH WATERSTOPS are made of flexible polyvinyl plastic ... that has superior weathering qualities, is not affected by temperature changes and chemical activity.

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Pay Dirt in This Issue

Mobile Rig Digs Deep Caisson	s 5
	shafts of 40-in. dia to a depth artment house job in Chicago.
Controlled Flooding Sinks Tripo	od 180 Ft
	s," Texas Tower No. 4, under- off the New Jersey coastline.
Multi-Story Precast Job Shows	Tight Planning
Preplanning proves key to story totally precast concr	speedy erection of first multi- rete building on the east coast.
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Record Size Rings Brace Huge	Pit 11
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Pacific Ocean Outfall Pulled 7	mi in 7 Days
	tfall off Los Angeles, 300 ft oves standout pipelaying job.
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Generally regarded as a models help in planning	designer's tool, earthmoving a job before digging begins.
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NEXT MONTH

Five corrugated-plate-roof airplane hangars under construction throughout the United States are causing contractors to scratch their heads. The roofs really are tricky to build. A special report will describe unique ways contractors are meeting the challenge.

THE GREATEST COMBINATION OF PROVED ADVANTAGES EVER BUILT INTO A SHOVEL, CRANE, DRAGLINE OR **PULLSHOVEL!**

What they do for you!

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- The Cushion Clutch eliminates shock overloads before they reach operating machinery - not after.
- Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and assure smooth, safe, accurate, fast spotting of loads.
- Northwest Dual Independent Shovel Crowd utilizes force that most independent crowd shovels waste one of the outstanding reasons why Northwest Shovels are recognized everywhere as a real Rock Shovel.
- Cast Steel Machinery Bases and Machinery Side Frames give a rigid foundation that maintains shaft alignment and insures longer life and lower maintenance costs. Ball and roller bearings on high-speed shafts assure the maximum transmission of power.
- A wide range of equipment permits you to meet any crane condition. You can have worm boom hoists or independent high-speed boom hoists with power controlled lowering, removable counterweight, easy-lowering pivoted-type gantries and one, two or three load lines.
- Machines convertible to Pullshovel operation with maximum digging depths and reach. There is a wide range of dipper widths and dipper capacities to choose from. Northwest pioneered the Pullshovel and brings you a proved unit for rugged job conditions.
- Space does not permit telling the whole story. Ask for complete details. You can't get the Northwest combination of advantages anywhere else at any price.

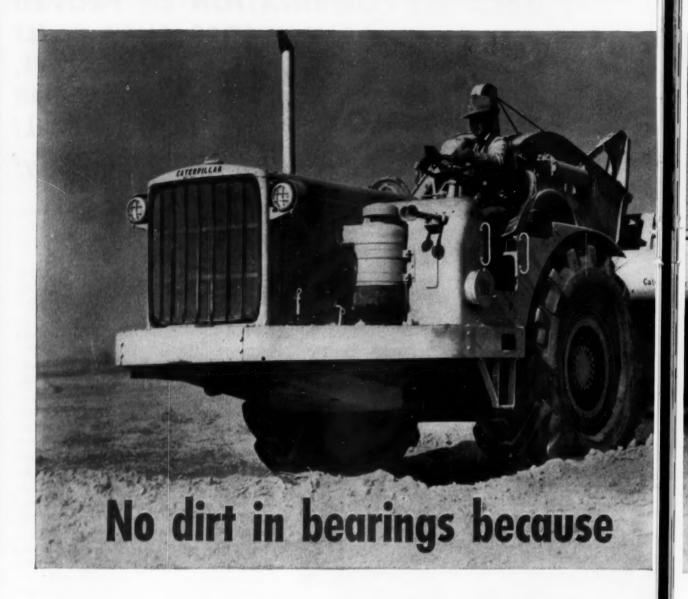
NORTHWEST ENGINEERING COMPANY 1503 Field Bldg., 135 South LaSalle St. Chicago 3, Illinois

SHOVELS . CRANES . DRAGLINES . PULLSHOVELS . TRUCK CRANES

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THE GREATEST COMBINATION D PROVED ADVANTAGES EVER BUILT INTO A SHOVEL, CRANE. DRAGLINE OR PULLSHOVEL



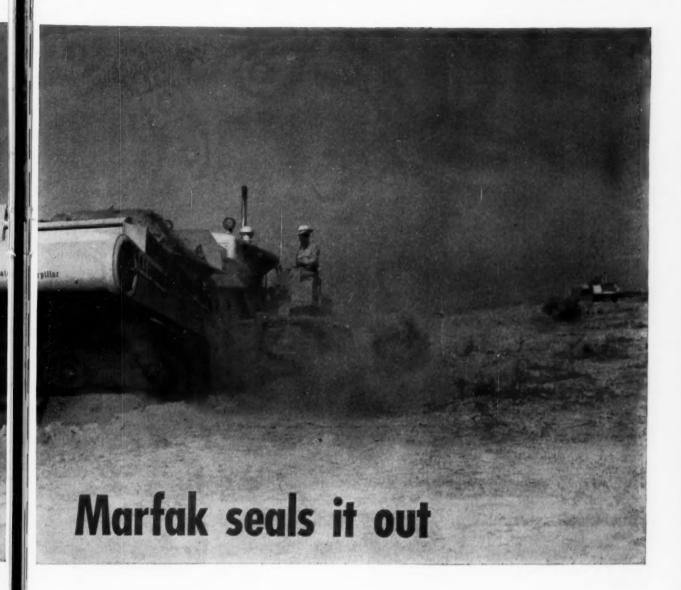
The most effective way to keep abrasive dirt out of your wheel bearings is to use *Texaco Marfak Heavy Duty 2*. It is designed specifically for wheel bearings and actually seals itself in, and stays in, through the heaviest service and highest temperatures. It gives you longer bearing life, and extra thousands of miles between repackings.

For chassis lubrication, Texaco Marfak has

the same "sealing in" action. It keeps out dirt and moisture to give top protection against wear and rust. And it won't jar out, pound out, or squeeze out. In fact, *Texaco Marfak* has proven so successful that over 650,000,000 pounds of it have been sold!

If you prefer an all-purpose lubricant, your choice would be Texaco Marfak Heavy Duty





Special 2. It pumps easily and handles all grease lubrication regardless of temperature.

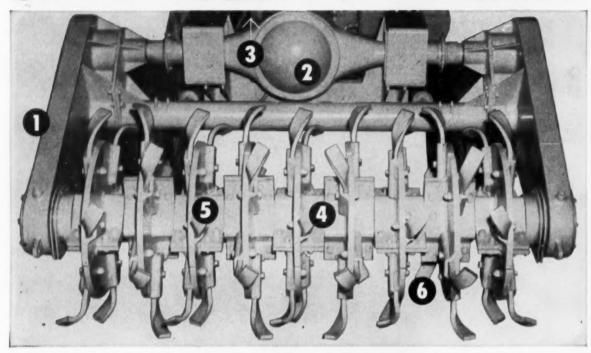
To get the same effective protection for crawler mechanisms, use *Texaco Track Roll Lubricant*. For differentials, specify *Texaco Universal Gear Lubricant EP*.

Ask a Texaco Lubrication Engineer to do these two things for you: (1) give you details on how Texaco lubricants can help you, and (2) work out a Texaco Simplified Lubrication Plan for your job—it lets you handle all major lubrication with no more than 6 Texaco products. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels FOR ALL CONTRACTORS' EQUIPMENT

If you are doing Soil Stabilization work, you know why this design is so important



The BROS Roto-Mixer's performance during the past two construction seasons has been sometimes described as truly amazing. If you

know in-place soil stabilization machines and jobs, as you review the design features below, you'll readily understand why.

CUTS MIXING TIME

1. Because drives are at outside ends of the rotor shaft, even mixing is accomplished in one pass. No need of a second pass to provide uniform mixing.

Full width mixing or any increment up to 7' is easily handled. Split-disk type tool plates are quickly removed for shoulder maintenance or other narrow work.

- 2. Three-speed transmission and 150 usable HP at 1800 RPM provides a greater range of mixing speed...and mixing control which eliminates "surging" effect.
- 3. Independent hydraulic control of rotor and hood provide ample space for proper mixing to 12" depths.

Materials are uniformly blended in a smooth, even course.

CUTS MAINTENANCE COSTS

- **4.** 6" square solid steel rotor shaft easily withstands shocks and strains of in-place mixing of rocky soils.
- 5. Split-disk type tool plates are of heavy-duty construction; quickly and easily removed or remounted.
- 6. Simplified tool holders. Heavyduty mixing tools are socket mounted, held by one bolt. Replacing worn tools is done in minutes.

You'll be glad to learn of the other important design and construction details of the Roto-Mixer. So see your nearest BROS Distributor for full information and a demonstration. Or write us today.





Road Machinery Division

BROS Incorporated

(formerly Win. Bros Boiler & Mfg. Co.)

1057 TENTH AVE. S.E. . MINNEAPOLIS 14, MINN.



The job shown here is on a street repaying contract in Los Angeles, California, following the construction of a big storm sewer. R. L. Heron & Co. uses the CAT* No. 933 Traxcavator to handle all its trenching and resurfacing work.

Says Jim Heron: "The tilt and fast bucket action and the oil clutch make this machine the best in its field. We've run a 2,200-foot water trench, three feet wide and nine inches deep, in about six hours with the No. 933. It really serves the purpose of two machines—a digger and a loader. It's one great piece of equipment!"

In any contractor's spread the *new*, *improved* Caterpillar No. 933 (Series E) Traxcavator is a money-making machine. It's fast, maneuverable and easy to move from job to job. It features a new heavy-duty undercarriage with new rugged track roller frame, new solid sprockets, new heavier idlers and new tough track rollers. The one-yard bucket is built for effective digging in tough materials, and the full 40-degree tilt-back

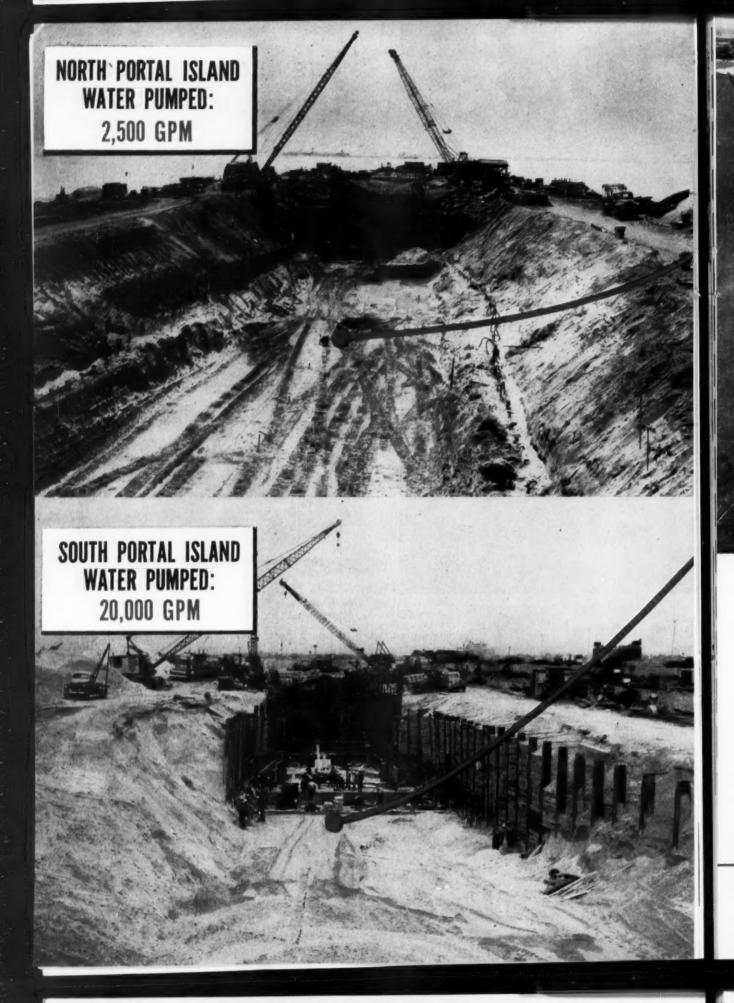
at ground level assures full loads without spillage. Fast-acting hydraulic lift controls and high reach speed up truck loading.

Ask your Caterpillar Dealer for a demonstration right on your job. He offers three sizes of Traxcavators—the new No. 933 Series E (1 yd.), No. 955 (1½ yd.) and No. 977 (2¼ yd.). And you can count on his reliable service and dependable Caterpillar parts to protect the long work life of the machines he sells. See him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*







Contractor: Tidewater Construction Corporation, Norfolk, Va. Engineers: Parsons, Brinckerhoff, Hall & Macdonald, New York Owners: Department of Highways, Commonwealth of Virginia

MORETRENCH WELLPOINTS

Make it Possible to Dig Deep and Dry in the Middle of Hampton Roads

On each of the man-made islands pictured here a deep excavation is being made in the dry for the north and south approaches to the vehicular tunnel which the state of Virginia is constructing under Hampton Roads, between Hampton and Norfolk. Bridges connect the islands to the mainland. The tun-

nel, running between the islands, will be one and onehalf miles long.

Moretrench wellpoint systems keep 38' of water under control while excavation proceeds rapidly, economically, and safely.

You can count on Moretrench Wellpoint Equipment to insure progress on your wet job, regardless of size. Our nearest office will gladly estimate on your requirements. Sales, rentals, contracts. Catalog on request.

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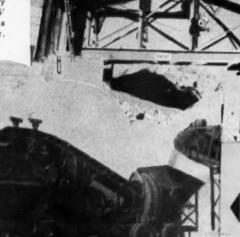
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Skid-Mounted Primary Portable Secondary

ortable Secondar PRODUCES BIG VOLUMES
Combination OF STRICT_SDECITION AGGREGATE

Cedarapids "Packaged" skidmounted stationary 3645 Double Impeller Impact Breaker produces a high percent of required smaller sizes in the primary reduction operation. Cedarapids 36" x 14' Feeder feeds quarry rock onto a single deck 40" x 6" Vibrating Grizzly to by-pass fines around the Impact Breaker.



Material from the Double Impeller is conveyed to a surge pile and is then fed into this Cedarapids Portable 4033 Hammermill Secondary Plant. Oversize from the top screen deck goes through the hammermill for secondary reduction, while material passing the 3/4" bottom screen deck is delivered directly to the Cedarapids screen-bin unit.

MAXIMUM PRODUCTION OF SPECIFIED SIZES

3/4"	to 3/8" M	ATERIAL
Size	Minimum	Maximum
1"	100	
3/4"	95	100
1/2"	50	90
3/8"	10	40
No. 4	1	10
No. 8	1	6
No. 30	1	6
No. 50	1	6
No. 10	0 1	5
No. 200	1	4

LIMITS—3/8" Chip Material				
Size Mi	inimum	Maximum		
3/6"	100			
No. 4	60	80		
No. 8	40	55		
No. 30	17	28		
No. 50	17	25		
No. 100	15	22		
No. 200	11	17		

The combination of a Cedarapids 3645 Double Impeller Impact Breaker and a Cedarapids Portable Hammermill Secondary used by Beu & Sons Co. of LaPorte City, Iowa, is producing 70% of 3/8" minus and 30% of 3/4" material at an average 220 ton per hour production rate . . . and as high as 5800 tons of 11/4" in 18 hours . . . with a high crushing percentage. Look at the screen-analysis table on this plant's production. This type of operation proves the versatility and productivity of Cedarapids equipment for turning out strictspecification aggregate in the tonnages demanded.

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

Construction News From Washington

Washington, D.C. August, 1957

New Attack on Jurisdictional Disputes

The AFL-CIO is planning to try out a new method of settling jurisdictional disputes between the Building Trades and industrial unions. The basic idea is to turn particular squabbles over job rights to two-man teams (one man from the Building Trades, one from the industrial unions) that will go to the scene of the dispute. Three of these two-man teams are being set up along geographical lines.

If the teams fail to settle the argument on the spot, then the problem will be kicked upstairs to an AFL-CIO headquarters committee.

The new scheme will be given a try even though insiders figure it isn't really the final answer to a problem that has plagued both unions and contractors for years.

Government Spending Ceiling

Pres. Eisenhower's spending lid may cut military construction expenditures during the next 12 months by as much as 10%, according to one Defense official. Other agencies are not so gloomy: the Civil Aeronautics Authority believes there will be very little affect on federal aid airports; the Interior and Welfare Departments are worried about the cuts, but aren't sure how they'll be hit.

One of the biggest construction programs, however, is in the clear. That's highway construction, which is being financed out of tax receipts specifically earmarked for road building.

Housing Help from Washington

The 1957 Housing legislation pumps a big new chunk of money into several types of construction—not only single-family homes, but also college dormitories, big city urban renewal projects, military housing, coop developments, and the like.

For slum clearance and urban renewal, the law provides an additional \$350 million for grants to cities for clearing blighted areas. Competition for this money is keen; some \$600 million in applications is expected within the next year.

College housing gets \$175 million. Fanny Mae gets authority to buy up to \$650 million of FHA and VA mortgages, plus additional authority totaling \$700 million for such programs as coop housing, military housing, rental housing, and other programs.

There's one hitch in all this, though: Pres. Eisenhower's economic advisers want to hold back use of some of this money as much as

possible. Their view is that it's inflationary. They still see the construction industry generally running at an all-time peak, and they would rather let housing suffer a little than boost it at the risk of forcing all construction prices higher.

Davis-Bacon Enforcement

Enforcement of Davis-Bacon wage requirements on interstate highway construction jobs will be financed out of the highway trust fund. But the amount finally approved for the year just beginning will be less than the Labor Department had for this work last year.

The department originally sought to increase its enforcement staff by seeking \$365,000 for the current year; this compares with \$300,000 for the year just ended. But Congress approved only \$200,000—a substantial cutback.

Even so, policing of state construction contracts for highways may be strict. Highway Administrator Tallamy is creating a new Project Examination Division in the Bureau of Public Roads under Frank Alexander, chief BPR accountant. The plan is to exercise much closer supervision over state handling of highway contracts—which commit \$9 of federal tax funds for every \$1 of state money.

Price Investigation

Price increases of some key construction materials—steel and cement in particular—are going to be investigated by Senator Estes Kefauver's antitrust and monopoly subcommittee. Contractors may be called in to say how the price increases affect them.

The committee figures that one of the basic causes of the inflation about which Washington is so worried is that price increases don't stem from increased demand so much as from the "price leadership" of a few big producers.

Another Tight Money Man

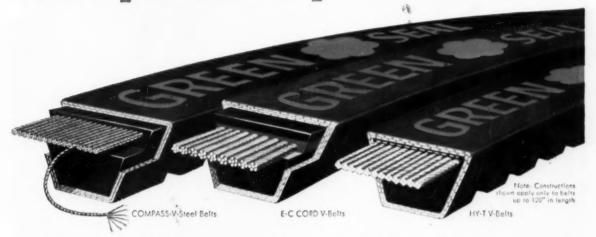
Pres. Eisenhower's new Secretary of the Treasury—Robert Anderson, who replaces George Humphrey—isn't going to bring in any new policies that will make financing of construction easier.

Economic forecasters are almost unanimous in predicting that business activity will ride along at a high level during the next six months. That means money will get scarcer—not more plentiful and interest rates will remain high.

Some parts of the construction industry—housing for example—draw up impressive evidence that they're being hit harder by tight money than other industries. But Administration officials and the Federal Reserve Board answer: Construction as a whole booms along at a record level.

Unless business activity should drop off sharply—something nobody expects—Anderson will continue Humphrey's tight money policies as a major weapon against inflation.

Now-V-Belts with the Green Seal solve the major multiple drive problem



The Green Seal stands for true dimensional stability in V-belts. And with Green Seal dimensionally stable belts you can be sure that matched sets are truly matched and will stay matched—that mismatching (the biggest problem in belting multiple drives successfully) is a thing of the past.

The key to dimensional stability lies in the tension members of the belt. For many years, steel cables as developed by Goodyear were the only length stable load carriers, but now they have been joined by synthetic cords, thanks to the

amazing Triple-Tempered 3-T process.

The 3-T process is an exclusive method of tempering the cord with Tension, Temperature and Time for maximum strength and minimum change in dimensions. This assures no change in length during storage plus greatly increased shock- and stretch-resistance on the drive.

The end result is smoother, longer-running teams of belts that give you maximum, trouble-free, horsepower hours at minimum cost. What better reason for specifying V-belts with the Green Seal?

GREEN SEAL by GOOD SYEAR

THE GREATEST NAME IN RUBBER

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Please send me more information abo	out how V-Belts with the Green Seal solve the major pr	roblem in belting multiple V-belt drives
Name		
Company		
Street Address		

Compass, E.C. Cord, Hy-T, Green Seal-T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio



When a bid bond means a job ... call The Travelers

You know the feeling. You've finally okayed the estimates. The closing date is just around the corner and you haven't received your bid bond.

Mister, it's at times like this that you need The Travelers.

The Travelers has trained bond specialists all across the country, ready to give you immediate service wherever you are. They're experts—men who know local requirements, know just what you need and what you don't need.

Next time you need efficient bond service, call your local Travelers agent. He'll see that you're well served.

The Travelers complete service for contractors also includes: Workmen's Compensation and Public Liability insurance with effective safety engineering to reduce accidents; Contractors' Equipment Floaters and Builders' Risk insurance serviced by a nation-wide claim organization that can give you prompt attention anywhere.



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 $\label{limit} All\ forms\ of\ business\ and\ personal\ insurance\ including \\ Life \bullet Accident \bullet Group \bullet Fire \bullet Marine \bullet Automobile \bullet Casualty \bullet Bonds$

Job Talk . . .



Four Axles Up Capacity Of Ready-Mix Trucks

Eight-wheeled GMC trucks with twin front and rear axles are giving the Warner Company of Philadelphia about 30% more payload capacity per vehicle in its concrete hauling operations.

Spreading some payload weight over two front axles instead of a single front axle permits the country's largest central-mix operator to mount 9-yd rather than 6½-yd agitator bodies on its GMCs.

Each rear axle is rated at 18,-000 lb and each front axle at 12,-000 lb, making total axle capacity of each vehicle 60,000 lb.

Warner has put 26 of the FWX-660's into service in the past 16

months. Sixteen of the latest have front power take-offs to rotate the bodies. These were specified to reduce initial costs, save vehicle weight, and eliminate auxiliary engine repairs.

Although GMC supplies the front axle for the front twin-axle assembly, the conversion is done by Hahn Motors, Inc., of Hamburg Pa

When completed, the two front axles are controlled from a single steering gear assembly and move in unison. With power steering included in the assembly, the two front axles turn smoothly and provide excellent maneuverability.



Dump Body Mounts Temporary Hoist

Stuck for a mobile hoist at the start of a big earthmoving job, Villa Contracting Co. simply mounted a steel frame in a dump body and projected a beam from the rear. A chain hoist riding the beam easily lifts engines and other heavy assemblies, and the trolley lets them be moved aboard. And as soon as a permanent hoisting rig arrives, the truck returns to normal duties.



Derailer Cuts Hazard Atop Tunnel Shaft

A runaway locomotive can easily take a nose dive into a tunnel shaft. A standard shaft gate is not enough protection. At the Pittsburgh sewer job, clever mechanics of the Dravo Corp, modified a piece of rail and installed it in the track near the top of the shaft. Normally, the modified part is

How to Build Better Walls

It's easy . . . use Sure-Grip concrete accessories.

When you use Sure-Grip Snap-In form ties, your walls line up better, don't leak at tie points and are easier to point. They look better too, because there aren't any big, loose cone patches staring you in the eye.

Sure-Grip's patented Snap-In tie which has special flat pieces or clevises fastened to the rod does the job. These clevises keep the tie from turning and breaking the bond with the concrete. Result . . . no leaking, positive snapping and a lot of time saved. Try Sure-Grip Snap-In form ties on your next job and see how much better they are than other ties or twisted wire.

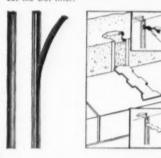




Flat clevises keep tie from turning and breaking bend with concrete. Tie always breaks at proper point. Special coating on rod between clevises and spreaders prevents bonding to concrete. V₃ turn snaps off rod.

Sure-Grip Anchors & Anchor Slot

... the surest and fastest way to fasten brick, stone, tile or terra cotta to concrete walls, columns and beams. Just nail the anchor slot to the forms. The patented double nailing feature supports the sides of the slot and keeps them from caving in when pouring. You don't have to grind anchors to make them fit. Sure-Grip anchor slot is made from rust resisting material; galvanized steel, Zinaloy, copper, etc., and is available in lengths from 6" to 10' either with or without the slot filler.



We also make a full line of stone, brick and furring anchors for every application.

FREE — Mail the coupon below for our 48 page catalog of concrete accessories and your nearest Sure-Grip dealer's name,

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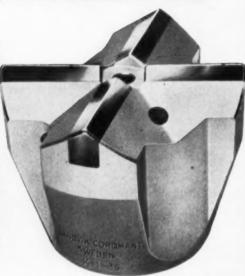
Longer bit life—with new Sandvik Coromant X-Bits



Sandvik Coromant Tungsten Carbide, (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities—therefore stronger, longer-lived.



Low quality Tungsten Carbide, (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.



NEXT time you buy bits, specify Sandvik Coromant because they give you more footage per bit, lower drilling costs. Here's why:

1 Only first-quality tungsten carbide is used—as shown in the microphotos above. This means less wear, longer life and a better job.

2 the bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

3 the bigger Sandvik Coromant bits are all of X-design, which prevents rifling. No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

	THESI	STANDARD SIZES ARE AVAILABLE
	THREAD	DIAMETERS AVAILABLE (IN INCHES)
es:	₹" F	
LDE	I" H	1½, 1¾, 1¾ and 1¾
SHOULDER	176" D	2, 21, 21, 21, 21, 21 and 3
SH	1+1 K	3, 31, 4 and 41
9	I¼" Rope	$1\frac{7}{8}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$, $2\frac{3}{4}$ and 3
PE	2" Rope	3½, 4, 4½ and 5
TYPE	400	2, 2¼ and 2½
0	600	21, 21, 3 and 31 The sizes underlined are X-shaped bits

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels—the most widely used in the world—cross bits from 1½" to 2½" and extension steel equipment.

Write, phone or cable today for further details to any of the addresses below:

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PACIFIC — 930 Brittan Avenue, San Carlos, Calif. Phone — Lytell 1-0375

CANADA — Montreal Airport, Quebec. Phone — Melrose 1-1871

MEXICO — Apartado Postal 56, Torreon, Coahuila. Phone — 39-07

JOB TALK ...

left on its side, as shown in the photo (p 17). In this position it will act as a derail to divert any runaway locomotive or cars off the track. But when the track has to be used, a workman simply kicks the piece and it flips over, rotating 90 deg. There it becomes part of the rail so rolling stock can pass over it without difficulty.



Adjustable Spotlight For Mechanic's Truck

Night maintenance is a lot easier for S. J. Groves Co. on its Virginia Turnpike job, thanks to a simple spotlight. Mounted on a bar just behind the cab, the spotlight can be rotated and also pivoted up and down on its circular slotted frame. It is made from an old headlight.



Job-Made Pushblock For Motor Grader

A steel pushblock welded to the frame of a Cat grader pays off for Curley Construction Co. on its Connecticut Turnpike job. It eliminates the need for tractors to leave their work and travel long distances to help a stalled or disabled rig.



Three LIMA Type 1250-SC Cranes owned by a major steel company are shown setting a girder for an overhead crane at a new open hearth furnace. Crane booms are 90 ft. long. The total lift, including equalizer beam, is 150 tons.

BRUTE STRENGTH FOR THE BIG JOBS

LIMA Type 1250-SC, 100-ton capacity on a 60' boom at 13' radius

You get all the muscle you need for almost any lifting job with the LIMA Type 1250-SC. There's reach aplenty, too, for it will swing a 200-ft. boom and 50-ft. jib with ease, hoisting steel and concrete to the top of a 24-story building. The major functions of the Type 1250-SC are controlled

through air-actuated clutches that are so smooth in operation that loads can be lifted and placed with pin-point pre-cision. And, although the 1250-SC is in the heavyweight class, it can be knocked down for haulage into units of less than 60,000 lbs. Side frames and counterweight segments are easily removed and the gantry can be folded to a height of 12 ft., 7½ in. for convenient job-to-job transportation. It is equipped with crawlers 16 ft., 10 in. wide and 20 ft., 7½ It is equipped with crawlers to it., to in. wide and 20 It., 172 in. long for maximum stability. Diesel or electric power—with torque converter optional—is available.

Find out more about this stalwart machine from your nearby LIMA distributor. Or write to Construction Equip-

ment Division, Baldwin-Lima-Hamilton Corporation, Lima,



Gantry is power-raised and power-lowered by means of boom hoist the result that the crane boom can be quickly lowered to permit traveling under low clearances.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

SHOVELS - CRANES DRAGLINES . PULLSHOVELS



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One of 9 reasons why contractors find International Trucks cost least to own!

Compact, new cab-forward International Trucks feature *low*, full-size cabs for convenient access to save drivers time and effort... short turning radius with bumper clearance for easier maneuvering even in tightest quarters.

These new Internationals have more powerful engines in every model—more *usable* power at low rpm to keep operating and maintenance costs low. They haul bigger legal loads with improved weight

distribution, with less over-all length.

As you would expect, new cabforward Internationals are qualitybuilt from the rugged bumpers to the end of the sturdy frames...built to do a truck job better, longer, for less.

And International Trucks cost least to own—cost records prove* this. Let your International Dealer show you today.

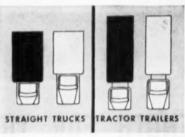
*Signed statements in our files, from fleet operators throughout the U.S., back up this statement.



International Harvester Company, Chicago Motor Trucks • Crawler Tractors Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors



1 Longer legal payloads with ideal 89 inch bumper - to - back - of - cab dimension. Full size, unobstructed cab has 61 inch fullwidth seats, no wheelhousings. Only 3½ inches higher than conventional models. Easier, more convenient entry and exit.



2 Bigger payloads with better weight distribution. More load space than conventional trucks with same over-all length or the same load space with shorter overall length. Easier to drive and maneuver. Safer, too, with better all-around vision.



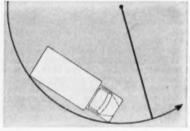
3 Lively, low cost performance with International-built engines that produce more usable horsepower at low rpm. Higher compression ratios for greater efficiency and economy. 12-volt ignition with "hot spark" circuit. Engines for every job.



4 Superior engine accessibility saves time and money. Large side opening hood permits complete freedom to all engine compartment components. Master cylinder, battery and most frequently serviced units are conveniently located.



5 Low first cost. New INTERNATIONAL cabforward models are priced right down with the lowest. They are quality-built throughout to keep operating and upkeep expense at rock bottom. Result: they are built to cost least to own over the years.

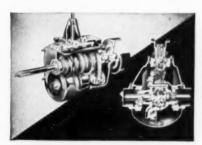


6 Minimum front overhang and true geometric steering for short turning radius with bumper clearance. Cam and roller-mounted twin lever gears are mounted ahead of the front axle. Comfortably positioned four-spoke, safety steering wheel.



New International cab-forward design . . . shown here is the Golden Anniversary model ACF-182 six-wheeler. Better weight distribution with short 96-inch bumper-to-back-of-cab dimension. More *usable* power in every model.

Other new cab-forward Internationals from 9,000 lbs. GVW including 4-wheel and all-wheel-drive haulers. You name the construction job . . . International builds the trucks that will do it better, longer, at *least* cost.



7 Choice of transmissions and rear axles assures you the proper capacity and final drive ratios to match the engine power, your load and road conditions exactly. You save on fuel. You get superior on the job performance and extended truck life.



8 Steel-Flex frames combine great strength without excess weight. Non-crystallizing cold squeezed rivets are used throughout for extra rigidity and proper flexibility. Factory-built drop-frame models are available to reduce loading time and effort.



9 World's most complete line. There is an International "tailor-made" for every truck job, ½-tonners to 96,000 pounders. Choice of 4-wheel, 6-wheel and all-wheel drive models, conventional and COE design. Every one built to cost least to own.

These contractors The longest suspension bridge in the world now under construction over Mackinac Straits

Page 22 - CONSTRUCTION METHODS and Equipment - August 1957

Merritt-Chapman & Scott Corporation and American Bridge Division of U.S. Steel Corporation

use Shell Lubricants in the construction equipment on Mackinac Bridge project

Today's engineering knowledge and modern construction equipment are making the mighty Mackinac Bridge a reality. This equipment requires oils and greases which will remain stable and give adequate lubrication at extreme temperature ranges. To keep their heavy-duty machines operating at maximum efficiency with a minimum of down time, both companies, Merritt-Chapman & Scott Corporation and American Bridge, chose Shell Lubricants and Fuels.

The Mackinac Bridge project is just one of the many construction operations where equipment was lubricated and protected by Shell products. Wherever heavyduty equipment operates, Shell Lubricants and Fuels are being used to keep machinery in top operating condition and hold maintenance costs down. Perhaps it will pay you to investigate the savings that can be realized through the use of Shell Industrial Lubricants and Fuels.

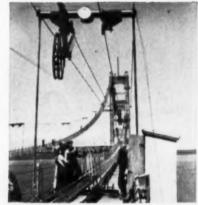
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Solvents Motor Oile Anti-Freeze Greases

Industrial Lubricants

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American Bridge Division of U. S. Steel Corporation has strung a total of 12,500 tons of cable as part of the 66,500-ton superstructure.



One of the 34 piers of the bridge substructure built by Merritt-Chapman & Scott Corporation

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NOW TRANSISTORIZED

power supply speaker microphone



Improved Performance with Lower Operating Cost

Already famous for the lowest maintenance and operating costs in the mobile 2-way radio field, Motorola radio is an even better investment now-with T-POWER. The vibrator is gone!... replaced by rugged, long life transistors. Reduced "down-time", lower maintenance, and greatly improved performance all result from this new development. The transistorized POWER VOICE Speaker is 10 times more powerful than conventional speakers . . . talks through noise and can be heard hundreds of feet away from the vehicle. The transistorized Dynamic Microphone gives unprecedented voice clarity and greater communications range.

New Mounting Flexibility with Plug-In Control Head . . . Same Basic Unit can be Used for Front or Trunk Mounting

With the T-POWER radio you are no longer restricted to one type of mounting. Install the complete radio, with drawer unit and plug-in control head, for underdash mounting. For rear mounting, the same basic drawer unit can be installed in the trunk and connected by cable to a dash-mounted control head. And—the same basic drawer unit can be interchanged with the equivalent Motorola Twin-V trunk mount models operated from a 12-volt negative ground source.

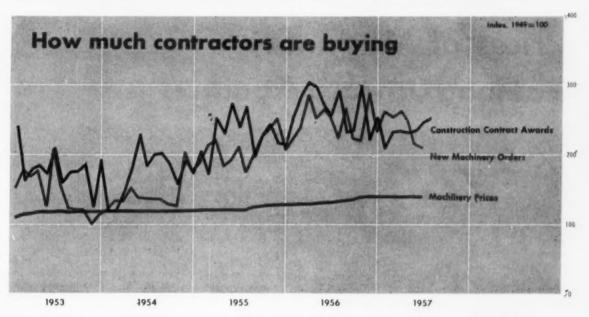
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Transistorized Power Supply for receiver and 25-watt transmitter.

MOTOROLA Communications & Electronics, Inc. + 4501 Augusta Blvd., Chicago 51, Illinois - A Subsidiary of Motorola, Inc.

Construction Machinery Price Trends



Price Index

	JUNE 1957	MONTH AGO	YEAR AGO	PERCENT CHANGE 1956-57
All Types of Equipment	157.6	157.6°	146.8	+ 7.4
Cranes, Draglines, Shovels	159.5	159.3	148.7	+ 7.3
Shovel, 1/2 cu yd	150.9	150.9*	144.7	+ 4.3
Shovel, 3/4 cu yd	162.9	162.9	152.3	+ 7.0
Shovel, 1-11/2 cu yd	172.4	170.6*	160.1	+ 7.7
Shovel, 2 cu ya	143.7	143.7	133.6	+ 7.6
Shovel, 3-342 cu ya	138.3	134.1	161 2	+ 7.5
Crane truck mounted	163.2	163.2	161.2	- 5.5
Bucket clam shell	152.1	162.1	136.7	11.7
Bucket dragline	180.8	180 8	165.1	+ 9.5
Cranes, Oraglines, Shovels Shovel, ½ cu yd Shovel, ¼ cu yd Shovel, 1-1½ cu yd Shovel, 2 cu yd Shovel, 3-3½ cu yd Shovel, 6 cu yd Crane, truck mounted Bucket, clam shell Bucket, dragline Crane, tractor mounted	126.6	126.6	144.7 152.3 160.1 133.6 147.2 161.2 153.7 136.7 165.1 120.3	+ 5.2
Scraper, 4 Wheel, 8-8-4 cu vd	155.0	155.0	140.0	10.7
Scraper, 4 Wheel, 14.4-15.2 cu vd	143.9	143.9	133.2	8.0
Scraper, 2 wheel	113.6a	113.6a	107.0a	+ 6.2
Grader, heavy duty	154.9	154.9	145.1	+ 6.8
Scrapers and Graders Scraper, 4 Wheel, 8-8.4 cu yd Scraper, 4 Wheel, 14.4-15.2 cu yd Scraper, 2 wheel Grader, heavy duty Grader, light & medium	152.2	152.2	145.0	+ 5.0
fractors	169.3	169.3	157.8	+ 7.3
Wheel type, off-highway	118.6a	118.6a	111.2	+ 6.7
Crawler type, 37.0-45.1 dhp	172.3	172.3	157.2	+ 9.6
60.5-75.0 dhp	176.6	176.6	160.3	+10.2
Tractors Wheel type, off-highway Crawler type, 37.0-45.1 dhp 60.5-75.0 dhp 102.0-116.0 dhp 126.0-155.0 dhp	172.3	172.3	161.9	+ 6.4
Machinery, Tractor Mounted Dozer, cable control Dozer, hydraulic control Cable, power control unit Loader, shovel type				
Dozer, cable control	149.0	149.0	146.3	+ 1.8
Cable power control	170.0	170.6	131.3	12.8
Loader, shovel type	149.1	149.1	132.6	12.4
pecialized Machinery	144.6	144.6 151.8 181.7 154.8 138.1 108.1 133.3	133.8	4.81
Ditcher	151.8	151.8	140.8	7.8
Roller, tandem	181.7	181.7	158.3	14.8
Roller, 3 wheels	154.8	154.8	139.3	+11.1
Ripper and rooter	138.1	138.1	121.8	+13.4
Dewatering pump, 10 M gph	108.1	108.1	105.4	+ 2.6
Ditcher Roller, tandem Roller, 3 wheels Ripper and rooter Dewatering pump, 10 M gph Dewatering pump, 90 M gph	133.3	133.3	124.3	+ 7.2
ortable Air Compressors	146.2			+ 9.8
ontractors Air Tools		150.0		0
Mixer, Pavers, Spreaders Mixer, port., 11 cu ft Mixer, port., 16 cu ft Mixer, truck, 4½ cu yd Mixer, paving, 34 cu ft Concrete finisher Bituminous distributor Bituminous spreader Bituminous spreader Bituminous paver	142.6	142.6*	134.2	+ 6.3
Mixer, port., 11 cu ft	151.7	151.7	145.3	+ 4.4
Mixer, port., 16 cu ft	153.6	153.6	144.8	+ 6.1
Mixer, truck, 41/2 cu yd	122.1	122.1	113.7	+ 7.4
Mixer, paving, 34 cu ft	174.3	174.3*	153.7	+13.4
Concrete finisher	166.3	166.3	158.0	+ 5.3
Bituminous distributor	115.9	115.9	108.3	7.0
Bituminous spreader	160.3	160.3	149.9	+ 6.9
mituminous paver	149.8	149.8	143.9	4.1

Prices Mark Time For Second Month

For the second consecutive month, manufacturers' prices of construction machinery show little change. In fact, the Bureau of Labor Statistics Price Index for June remains exactly the same as May—157.6 based on average prices in 1947-49 as 100. However, these prices are 7.4% higher than in June a year ago. For the first six months of 1957, they average 8.5% more than during the first half of 1956 and 3.0% above the second half average.

June brought only two increases in machinery prices. The price of 3-3½-yd power shovels increased 2.7% above May. And 1½-yd shovels moved up 1.1%. Added to the May increase this makes a 2.7% rise for the last two months.

Revisions of the May price indexes show paving mixers, 34 cu ft, up 1.5% instead of unchanged as reported originally; and shovel type loader attachments for tractors moved up 1.6%. Slight downward revisions of April and May indexes were made for $1\frac{1}{2}$ -yd power shovels and truck-mounted cranes. With the revisions, the April-June trends show no change in prices of $\frac{1}{2}$ -yd shovels but a slight 0.3% increase for truck-mounted cranes.

The tapering off in the machinery price rise this year is obvious from the fact that the BLS Construction Machinery Price Index rose only 1.1% between December 15, 1956, and June 15, 1957. In the corresponding six months period a year ago, this index showed prices going up 2.6%. And in the last half of 1956—June 15 to December 15—the Index shot up 6.2%.

But the quiet on the machinery price front will not continue (see page 26). Prices are going up despite the drop in 39 new orders in the second quarter (see chart).

Prices of Machinery To Head Upward Again

CONTRACTORS' COSTS are in for another nudge upward now that they have digested the 1957 round of wage raises, steel price increases and some, but not all of this year's rise in cement prices (see page 25). The new pressure on costs will come from higher prices contractors will pay for many types of excavating and earth-moving machinery which they'll buy in the months to come.

Increased list prices of construction machine will soon be announced on many lines. Some, in fact moved up in July and several are rising this month. Thus the relative stability of price tags during the first six months of '57 is being upset by manufacturers' plans to up prices, generally by 2% to 6%. Some increases may be as great as 10%

Of 44 construction machinery makers polled late last month, 26 say they plan to up their prices between August 1 and December 31. Most of these increases will be announced by October. Moreover, three other firms say they may raise price tags later on this year, though no definite plans

have yet been made.

But not all prices are on the rise. In fact, two companies may reduce prices on certain items, Furthermore, over one-quarter, 12 out of 44 firms, plan no price changes during the balance of this year. Of these, four manufacturers boosted their prices in July and three others put higher price lists into effect earlier this year. Still another two firms, while not intending to change prices this year, do expect to mark them up sometime after December 31.

Many to Increase This Month

A few "early birds" have already posted increased list prices. In July, for instance, Blaw-Knox upped prices about 7.5% on many types of its construction machinery, while Browning Manufacturing increased its line of road

rollers by 6% and crushers by 4% and American Brake Shoe upped prices of dippers by 71/2 % late in July. A third company increased prices of its line by 5-6%.

August is bringing a greater rash of price hikes. On August 1, Hyster Company was scheduled to up its line by 5%, while Clark Equipment raised the list price for tractor shovels.

Other makes and types of construction machinery are also expected to come up with price increases marked on them this month. At least three lines of graders, two makes of road rollers, one line of two-wheel and four-wheel tractors and scrapers, one line of bituminous paving machines and one line of clamshell buckets and bucket loaders are scheduled for new, higher price lists in August, according to the Construction Methods survey.

The price increases scheduled for August are expected to be roughly 6%-10% for one make of road rollers and graders and 6%-8% for another make of motor graders. For the wheel tractor and scraper line, the rise will be about 6% and for the clamshell buckets and loaders line the increase will run around 8%. A maker of bituminous paving machinery is raising prices by 6%.

But August won't bring the end to this new wave in construction machinery price increases. More firms expect to raise prices sometime before the end of this year.

Four of the larger power shovel manufacturers plan to up prices during the coming months with increases ranging from 2% to 5%. One company plans a 3% rise for September; two other companies to hike their lines by about 5% in the fourth quarter; and a fourth maker, a 2%-3% rise between now and the end of 1957. By contrast, one of the smaller shovel makers plans to hold its price line for the balance of the year.

Two lines of big, off-highway

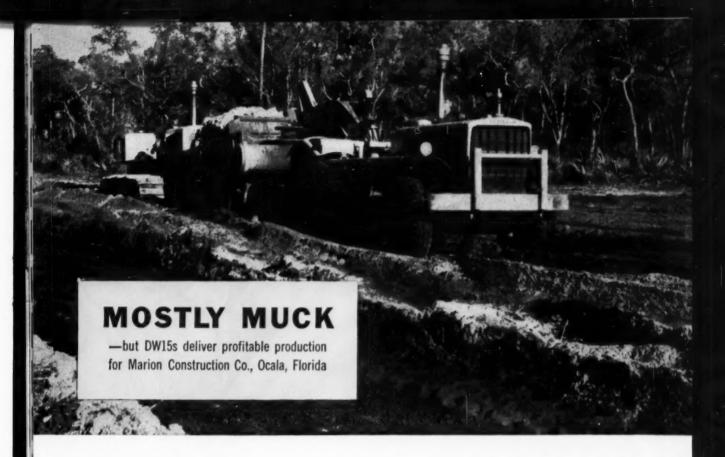
trucks are due for higher prices while a third maker has at least enough chassis on hand to make a rise unlikely-at least not before November. Of the two manufacturers of off-highway trucks who do plan increases, one expects to mark prices up 3%-5% in October. The second firm, however, could not be specific. The third firm, which has no changes in mind for the next few months, says its large stock of chassis already on hand should help stave off an increase because they aren't affected by higher steel prices. Moreover, this firm's supplier of truck bodies and hoists is not expected to raise prices on these items during the rest of '57. A second supplier of truck and trailer dump bodies will also hold its price line for the rest of this year.

Of five firms included in this survey who make crawler tractors, Caterpillar Tractor upped its prices an average of 7% (tractors and other machines) in July, and two other firms plan price increases before the end of '57. But a fourth firm, which was holding up price change plans for completion of its market outlook survey, thinks it may possibly have to make a downward adjustment on some of its lines. This is because of buyer's resistance which it attributes to the pinch of spiraling prices on the finances of potential customers. A fifth tractor manufacturer is "likely" to increase prices by year's end.

Two major diesel engine makers are not planning to raise their price line before the end of this year. Cummins Engine Co., incidentally, notes that it hasn't increased its prices since 1953. The other firm was uncertain as to the price future of its line during the next few months and had no changes planned.

Concrete mixers - stationary and truck types-are going up in price, according to reports from three firms. One company plans increases for various items ranging from 1% to 8%. A second manufacturer expects to up prices 5-6% in October.

Among other price increases to continued on page 30



This is one of four CAT* DW15s with scrapers building a 15.5-mile stretch of 2-lane blacktop on U. S. 1 between Jacksonville and St. Augustine. A D8 is push-loading it. This job is only 3 feet above sea level, and the material is wet and heavy. There are some 370,000 cu. yd. to be excavated and moved for fill on the stretch.

Marion Constr. Co. is making 2 uses of the borrow pits: (1) to get fill and (2) to provide drainage ditches for the road. On 6,000-foot round-trip hauls, the DW15s averaged 150 cu. yd. an hour each. They worked 10 hours a day, 6 days a week. According to Vice President Shaw Pearsall they performed excellently and with a minimum of down time in the tough going.

Now a new DW15 (Series E) Tractor with a new No. 428 LOWBOWL Scraper

All rugged yellow machines are engineered to handle the hard work profitably. But, as productive as they are, Caterpillar is constantly looking for ways to improve their performance. When a new model has been thoroughly job tested, it is made available. And that's the case of the new DW15 (Series E)-No. 428 LOW-BOWL Scraper. The high torque Cat Engine delivers 200 HP (maximum output capacity). With speeds up to 37.2 MPH, plus the extra sure-footedness of four wheels, the DW15 gives you faster hauls and cycle times with greater safety. The No. 428 Scraper has a capacity of 13 cu. yd. struck and 18 cu. yd. heaped. Because of exclusive LOWBOWL design, it loads quicker and more easily than any unit of its capacity—another factor in high production at low cost.

For complete details about the new DW15, see your Caterpillar Dealer.

And remember, he backs you with round-the-clock service and parts you can trust. Just you name the date—he'll be glad to demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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experience on the design,
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Dept. CM&E-8, Caterpillar Tractor Co. Peoria, III.

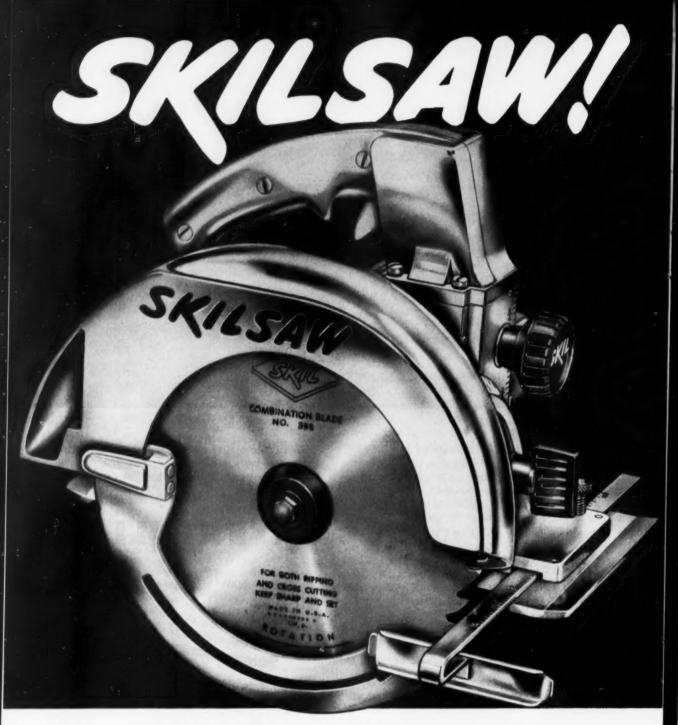


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TWO SIZES—7½" Model 857 and 8½" Model 858

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Every feature engineered to maintain SKIL quality and leadership. "Floating" blade guard and fast blade-change design are exclusive new features. Not available on any other brand. Improved helical gearing with new hi-angle cut for smoother operation. Ball-bearing construction throughout.

And convenience is the by-word. Precise depth adjustments possible with direct reading scales. Easily reset to compensate for blade sharpenings. Only one guide edge needed for either vertical or bevel cuts. Built-in sawdust blower keeps cutting line clear.

For over thirty-five years builders and contractors have proved one fact: you SAVE with SKIL tools. New SKILSAW Models 857 and 858 will provide even greater savings. Many new exclusive SKIL time-saving features. Highly efficient performance means more power to do jobs faster. In all—14 special features which add up to real savings—in time, work, maintenance. Plus, a new, low introductory price. Model 857—7½" size—only \$99.50 and only \$115.00 for 8½" Model 858. Price includes rip fence.

Feature for feature these new saws beat all other $7\frac{1}{4}$ " or $8\frac{1}{4}$ " models. On comparative tests for power, speed, efficiency, convenience—SKILSAW scores highest. Write today for more information or for an on-the-job demonstration by your local distributor at no obligation.

EXCLUSIVE!

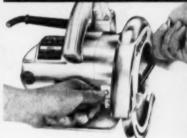
Important new safety feature. Least possible amount of blade exposed at any time. Top and bottom blade guards rotate with blade. Another SKIL first—"Floating" TWINGUARDS.



Maximum protection on deep cuts



Eliminates hazards on shallow cuts



EXCLUSIVE!

Fastest blade change on a power saw! Push-button lock engages saw shaft for fast, simple blade change. Operation completed in seconds. Easy, convenient.

SAVE with SKIL Hi-Speed Saws



Made only by SKIL Corporation, manufacturer of famous SKIL and SKILSAW products, Chicago 30, Illinois.

SKIL Corporation Dept. CM-87

5033 Elston Avenue Chicago 30, Illinois In Canada: 3601 Dundas Street West Toronto 9, Ontario

Please send me more information about new Hi-Speed Saws

Please send me more information about new Hi-Speed Saws

Please have local distributor give me a no obligation demonstration

NAME

.....

STREET.

CITY__

TOWN_

come in the next few months, a maker of crushing plants and asphalt plants sees a probable 5%-7% rise in November for certain items. However, redesign is making it possible for this company to actually reduce prices this month on some of its items.

Rounding out the list of machinery types which are headed for higher list prices, at least one manufacturer of ditching and trenching machines figures to up

Provide

its prices before the end of the year, possibly by 4% to 5%.

Though three other machinery makers have no plans to change their prices during the next few months, they are hedging. Gradall Division of Warner & Swazey, for instance, notes that a price rise might come later on this year depending on the results of its current cost reduction program. Also, a manufacturer of road rollers says prices may go

up if its suppliers increase their prices. A firm making buckets may change prices after October.

Steel, Labor Costs Blamed

Construction machinery manufacturers blame this new wave of price advances on higher costs of labor and steel as well as increased prices charged by suppliers of parts and components.

Labor costs have risen this year for 24 of the 44 firms reporting. On the other hand, labor costs have been steady so far this year for seven of the companies reporting.

Also contributing to the new upswing in machinery prices is the steel price rise which went into effect July 1. The higher cost of steel will affect prices of 30 machinery manufacturers while two firms think this might have some effect. However, nine companies say the increased price of steel won't affect their machinery prices.

Suppliers may also raise their prices because steel is more costly. So a few machinery manufacturers are waiting to see what suppliers do before they make up their minds on their own prices.

Cement Outlook

The July cement strike now ended may have two major effects on the portland cement supply and price outlook for the rest of this year. The exhaustion of local supplies, which forced contractors to halt many projects at the concrete pouring stage, may mean short supplies for a couple of months.

Moreover, cement price increases are in the cards. Some increases are expected when mills announce their fourth quarter prices. Changes in cement prices are generally effective at the beginning of the quarter—July 1, October 1, January 1, or April 1—and new prices hold for the duration of the quarter. However, Philadelphia sources say that cement producers in Pennsylvania may not wait until the fourth quarter before upping their prices.

But some companies, such as Alpha Portland plan to hold the price line. And Arizona Portland cut its mill prices 15¢ per bbl. in July.

How much of an increase? continued on page 32



MORLIFE® Over-Center C L U T C H E S



Small Spring Loaded



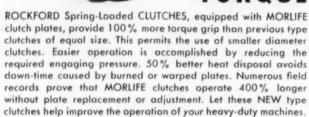
Heavy Duty Spring Loaded



Oil or Dry Multiple Disc



Heavy Duty





Take-Offs



SEND FOR THIS HANDY BULLETIN Gives dimensions, capacity tables and complete specifications. Suggests typical applications.



Speed

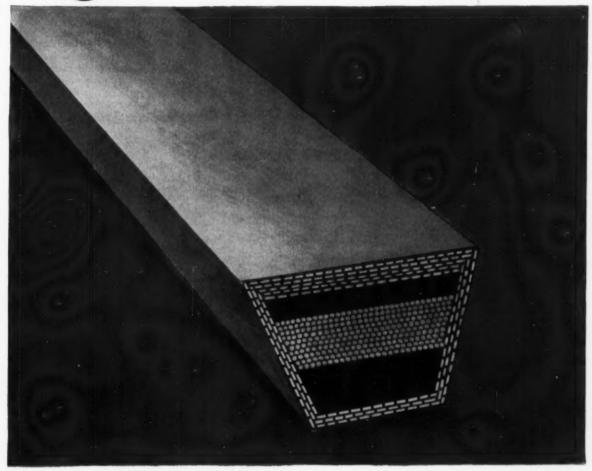
ROCKFORD Clutch Division BORG-WARNER

1331 Eighteenth Ave., Rockford, III., U.S.A.

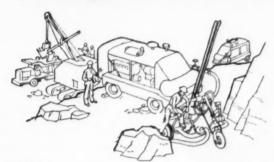
Expert Sales Borg-Warner International — 36 So. Wabash, Chicago 3, III.

900000





QUALITY— your Biggest V-Belt Saving



Exclusive Equa-Tensil cord construction; new curing methods; the facilities of the largest and most modern plant devoted exclusively to the production of endless transmission belts—these are some of the factors that bring to the construction and quarrying industries the one V-Belt whose quality assures you of getting the most V-Belt for your money.

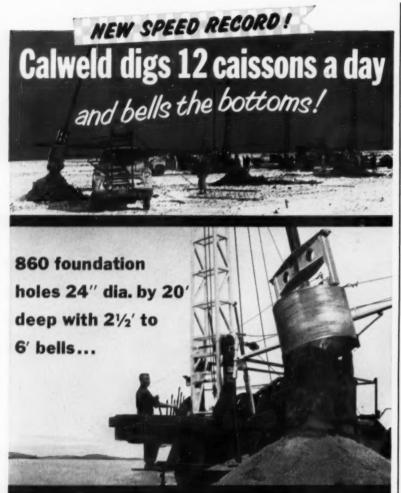
This quality is built into every U.S. V-Belt. It contributes greatly to the long life and efficient operation of off-the-road equipment, compressors, generators, crushers, conveyors—any place where power transmission belts take heavy shock loads.

A complete line of V-Belts, plus expert engineering assistance, is available at any of the 28 "U.S." District Sales Offices, at selected distributors, or write us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.



Mechanical Goods Division

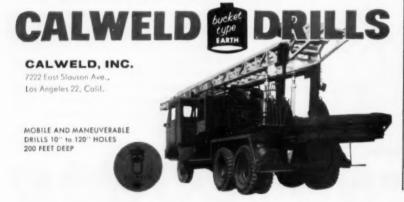
United States Rubber



AT 1/3 THE COST of constructing conventional spread footings, six Calweld Earth Drills recently dug 860 holes for drilled-in-place caissons—at speeds up to 12 complete caissons per rig per day! Hitting a record smashing day's rate of 74 completed drilled-in-place caissons, the six rugged Calweld rigs rang up 641 completions in only 14 days!

Performing under adverse conditions, frequently in frozen ground, the Calweld Earth Drills dug 20-foot holes 24 inches in diameter...belled the bottoms from 2½ to 6 feet...placed reinforcing steel cages in all holes...placed steel casings in 25% of the holes...and pulled the casings after concrete was poured.

This outstanding performance is typical of what Calweld Earth Drills can do for you. They can drill any size hole from 10" to 10' in dia. to a depth of 200', Write for factual job report "Earth Borers Dig Caisson Holes."



CONSTRUCTION BUSINESS . . .

Manufacturers are reluctant to tip their hands. Ideal Cement Co., which operates 14 plants in the West and Gulf Coast areas, announced it would raise mill prices October 1. But the firm would not reveal how much of an increase was planned. A Penn-Dixie official had "no comment" on whether his firm would raise its mill prices before October 1, but he believes that prices are "very apt" to change in the fourth quarter. However, major suppliers in Detroit, Chicago, and San Francisco feel that any increase would run about 15¢ per barrel.

Some west coast areas, by contrast, feel pretty safe from cement price hikes before the first of the year. Seattle, for example, looks for no increase in mill prices before January 1 because mills will honor earlier assurances that no boosts would be made before then. San Francisco and northern California cement users note that mills in that area guarantee present prices through 1957.

Cement supplies were exhausted, or nearly gone, in many localities by the middle of July. Project after project was shut down on reaching the concrete pouring stage. Some interstate highway projects were delayed.

Even though mills had large inventories of cement before the strike hit and even though a portion of the industry's capacity was not strike-bound and kept producing during the strike, the big gap probably will not be filled without lingering shortages to harass contractors in August and possibly September. Needs have pyramided to the point where shipments may be inadequate to meet the heavy demand in areas where pouring schedules have bunched up the most.

Hardest hit areas are New York, Philadelphia, Baltimore, Seattle (where Lone Star plants were struck April 1, and shortages were evident long before the cement strike spread), Providence, R. I., Cincinnati, and Kansas City. Texas may show trouble spots in Dallas, Ft. Worth, and Houston though the strike in this area started later.

Less likely to be hit by shortages are Cleveland, Chicago, Birmingham, Atlanta, Pittsburgh, St. Louis, Denver, San Francisco, and Los Angeles.

Euc Scrapers Protect Profits

AGC predicts big construction volume, sharper competition, tighter profit squeeze in years ahead.

With low bid prices,
you need equipment
that increases productivity
to protect your profit margin.



Only Euclid Offers These

3 TYPES

of Performance-Proved SCRAPERS

> Complete data on Euclid Scrapers shown on the following pages is available from the dealer in your area or from Euclid Division.



TWIN-POWER



OVERHUNG ENGINE



SIX WHEELER





Small Job or Big Project...

TWIN

OUTSTANDING PERFORMANCE

This exclusive Euclid development has put the "Twin" years ahead of any other scraper . . . in performance, workability, and in productivity. By using two engines—each driving an axle through separate Torqmatic Drives—the "Twin" has tremendous power and traction. It can work independent of other equipment on small grading jobs or big yardage projects. It has set new production records on a wide range of earthmoving work and has consistently moved the cheapest dirt.

With "Twins" in your fleet you can meet the challenge of tougher competition and rising costs and still protect your profit margin.

SPECIFICATIONS

Model TS-24 518 total h.p. · 24 yds. struck and 32 yds. heaped · 27.00 x 33 tires · Torqmatic Drives · NoSpin Differentials

(33.5 x 33 tires available as optional equipment)



All Euclid Scrapers have these profit-making teatures:



With struck capacities of 7, 12 and 18 cu. yds., there's an overhung engine type "Euc" for practically any job requirement. Each is a top performer in its class with advanced design features that cut cycle time and step up production. Short "nose" overhang provides greater stability and operator comfort—permits "Eucs" to utilize faster travel speeds. Full 90° steering with push-pull hydraulic jacks gives good maneuverability, short non-stop turns.

All of these scrapers are designed for easy maintenance—major disassembly is not necessary to service or replace main components of power train. This cuts downtime to a minimum and pays off in more payloads per day and lower maintenance cost.



MODELS AND SPECIFICATIONS

S-7 S-12 143 h.p. 7 yds. struck and 9 yds. heaped 7 Torqmatic Drive 18.00 x 25 tires (21.00 x 25 optional)

218 h.p.

218 h.p. • 12 yds. struck and 16 yds. heaped • 5 speed transmission

5-18

300 h.p. • 18 yds. struck and 25 yds. heaped • 4 Speed Torqmatic Drive • 27.00 x 33 tires (33.5 x 33 optional)

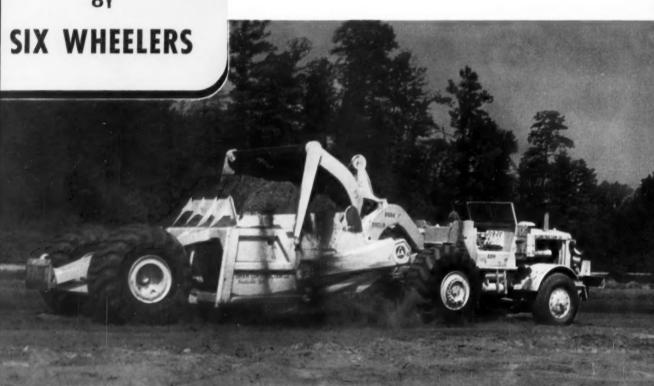
Note: Rear-Dumps of 12 and 35 tons are interchangeable with Models S-7 and S-18 respectively • 13 yd. Bottom-Dump is available for Model S-12.

Hydraulic Lever Action · 4 section Reversible and Interchangeable Cutting
Edges · Original low wide bowl design · Performance-Proved Euclid
Planetary Drive · Unequalled Accessibility · Easy Operation
Fast Loading and Dumping



3 SIZES

For high speed, long haul work, these 4-wheel tractor scrapers provide maximum stability. They have struck capacities of 12, 18 and 24 yds. and the same cost-cutting featureshydraulic lever action, 4-section cutting blade, low, wide bowl, etc.—of other Euclid models. In spite of rugged structural strength that's designed for work with big pushers. these "Eucs" have less weight per horsepower, giving them performance that helps protect your profit margin by moving more yards at lowest cost.



MODELS AND SPECIFICATIONS

55-12

200 or 218 h.p. · 12 yds. struck and 16 yds. heaped · 5 speed transmission · 21.00 x 25 drive and scraper tires (24.00 x 25 optional)

SS-18

300 h.p. · 18 yds. struck and 25 yds. heaped · 3 speed Torqmatic Drive · 24.00 x 25 drive and scraper tires (29.5 x 25 optional)

55-24

300 or 335 h.p. · 24 yds. struck and 32 yds. heaped · 4 speed Torqmatic Drive with converter lock-up · 27.00 x 33 drive and scraper tires (33.5 x 33 optional)

Note: Bottom-Dumps of 13, 17 and 25 yds. struck are interchangeable with the scraper bowls.



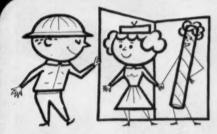
EUCLID DIVISION

General Motors Corporation · Cleveland 17, Ohio



HERE'S A MOVIE FOR POWDER MEN ONLY

"How to handle
WOMEN
and
EXPLOSIVES"



TREAT THEM GENTLY
AND WITH RESPECT



PROTECT THEM FROM
UNAUTHORIZED PERSONS



OBEY THE DO'S AND DON'TS

to help you blast with greater safety

You'll protect your safety record and gain a smoother, safer blasting operation if you use the new Atlas movie "How to Handle Women and Explosives" to help your men observe basic safe practices in their work.

You'll make a deep impression at your next safety meeting with this film which is calculated to bring out amused chuckles and possibly a few guffaws. At the same time it stresses the fact that both women and explosives must be "handled with care" and that both have a list of Do's and Don'ts which must be observed in order to get along with them safely.

Many large operations are using "How to Handle Women and Explosives" as a safety meeting kick-off and following with a discussion of the Do's and Don'ts case insert.

The film, complete with a suggested program kit and enough copies of the Do's and Don'ts for your audience, will be sent to you without cost if you write us on your company letterhead, giving the date or dates you plan to use it.



B.F.Goodrich report:

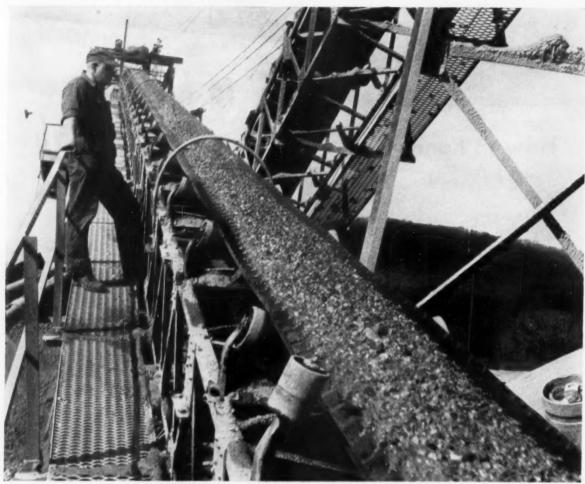


Photo courtesy Basic Construction Materials Division, Chillicothe, Ohio

Rocks used to slide down faster than they went up

B. F. Goodrich improvements in rubber brought extra savings

Problem: Getting tons of sopping wet rock and gravel up that steep incline was causing plenty of trouble at this plant. When a regular conveyor belt was used, the wet gravel often washed down faster than the moving belt could carry it ub.

What was done: Then a B.F.Goodrich man told the company about a special kind of belt, developed by B.F. Goodrich, to handle wet materials. This "Riffle Grip" belt, as it is called, is made with a series of extra-tough rubber ridges molded into the cover. The tread that these ridges form holds the

gravel in place, and at the same time, channels the water to the edges of the belt where it falls off.

Savings: This B.F.Goodrich belt was tried, and it works perfectly. The gravel flows smoothly uphill. More tons are handled with no slipping, no sliding, no problems of any kind.

Extra benefits: Another important feature is that just by using different angles of incline and troughing idlers, this same belt can carry such sloppy materials as wet mixed concrete and keep the water from draining away.

Where to buy: Your B.F. Goodrich

distributor has exact specifications for the B.F.Goodrich conveyor belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about all the rubber products B.F.Goodrich makes for industry. B.F.Goodrich Industrial Products Co., Dept. M-994, Akron 18, O.





No Room for Accidents

• Foley Construction Co. of Cincinnati backfills immediately after placing each 10-ft section of 9-ft dia concrete sewer pipe on this \$800,000 job through a residential section of Cincinnati. Restricted work space makes it impractical for the crane to work alongside the sewer line, so it walks out over the freshly filled area to place new pipe sections. And, the contractor says, this also is the best way to "keep kids out of the open ditch." The rubber-tired Michigan tractor shovel creeps out over the pipe to backfill with 2-cu-yd loads. Buckets of grout purposely left near the end of the pipe help the operator see when he has pushed the fill far enough.



New SUPERIOR Heavy-Duty SCREED SUPPORTS

For Use with 11/4" and 11/2" I.D. Pipe Screeds and Vibratory Screeding Equipment



ADJUSTABLE SCREED HOLDER

Consists of a 1" threaded rod to which is welded a cradle to hold the pipe screed. This cradle is slotted as shown so that the arms may be bent over to secure the 11/4" or 11/2' I.D. pipe screed. Threaded onto the rods is a half nut which provides the adjust-

Adjustable Standard SUPERIOR

SCREED CHAIRS

FOR FORMED SLABS 41/2" AND GREATER

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.





FOR SLABS ON FILL

With re-usable screed holders using 1" 1.D. pipe and rectangular bars for screeds.

RELIDERMU **Especially Designed** for Use on Bridges, Underpasses and **Overpasses**

These Screed Supports are designed to take the heavy loads imposed by traveling vibrating screeding equipment. The Bases for the screed holders are of two types: (1) The Metal Base for use on structural steel members; (2) the Chair-Type Base for use on a plywood deck.

On Structural Steel: As shown above, the Metal Base is tack-welded to the top flange on approximately four foot centers. The Screed Holder is set into the base, and adjusted to height by turning the nut. The threads are fast, three to the inch, and of a contour type, non-clogging and easily cleaned.

On Wood or Plywood Decks: The Chair Base is set on the deck at approximately four foot centers. It is easily secured to the deck by nailing across the upturned legs. If desired, legs can be supplied of galvanized wire. The Chair Base with holder is shown below.

PERFORMANCE

Superior's Heavy-Duty Adjustable Screed Supports have been used on turnpike structures and other projects. Results in the field indicate that this method of supporting screeds provides a simple answer to an otherwise expensive and complicated set up. Write for Bulletin.

HOLDER INSERTED IN CHAIR BASE

Only the inexpensive bases are left in the concrete. The Adjustable Holders are easily removed, together with the pipe screed, because the holders are set, not screwed into the base. The nut fully covers the base opening and prevents concrete from entering.



ADJUSTABLE

RE-USABLE

9301 King St., Franklin Park, III.

New York Office

1775 Broadway, New York 19, N. Y.

Pacific Coast Plant

2100 Williams St., San Leandro, Calif.

Construction News in Pictures . . .



Another Turnpike

Paving train of Worth Construction Co., Fort Worth, Tex., places a daily average of about 4,000 sq yd of concrete at the eastern end of the Dallas-Fort Worth Turnpike. Concrete is placed in two 5-in. lifts, reinforced at mid-thickness with welded wire fabric. The 30-mi turnpike is scheduled to be opened this month.

continued on next page



Shaft Mucker

Electric-powered TD6 Skid-Shovel loads out 8-ft lifts of shot rock on 430-ft shaft job near Pittsburgh. Between rounds and while shaft is being lined, it is lifted out of hole. Williamson Shaft Contracting Co., Columbus, Ohio, converted the rig.



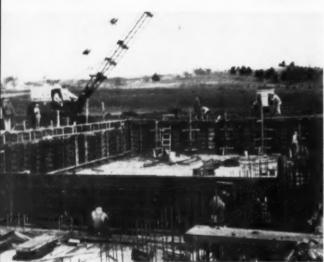
Concrete Buggy

Ingenious contractors find new ways to use crawler tractors with almost every job. John Delphia of Patterson, Cal., rigged up this Caterpillar D8 to make isolated concrete pours at Mosquite Dam in the Sacramento Valley.



Ready for Traffic

The \$4.4-million Harvey Canal Tunnel in Louisiana is nearly completed after three years of work. All that remains is to waterproof the structure at the west half of the tunnel, backfill the area, and pull the sheet piling. Joint venture contractor on the job is R. P. Farnsworth & Co. and Mason & Hanger-Silas Mason Co.



Fast Pour

Sharp Bros. Contracting Co. of Kansas City poured 530 yd of concrete in 5½ hr for a \$10-million power plant at Independence, Mo. Because of the variety of shapes to be poured, Sharp used 40,000 sq ft of Symons prefabricated forms for 8,000 yd of concrete.



Sand Pile

"Dozer piles up 25,000 cu yd of sand to "preload" soft soil on which Esso Standard Oil Co. will build a big oil storage tank at its Bayonne, N.J., refinery. Preloading for 10 months will compact the soil so that it will not be necessary to erect the tank on piling.

Actual road tests prove Dodge outpulls "other two" low-priced trucks by 32%



Dodge gives you Extra Pull . . . cuts running time and maintenance costs



Here is definite proof that Dodge gives you a big power advantage that will pay off on your hauling jobs.

All three low-priced trucks were recently compared side by side in a grueling series of performance tests. The dynamometer test shown here is only one of them. And in each test . . . climbing power . . . passing power . . . pulling power . . . Dodge proved the outstanding truck of the low-priced three.

Extra power does it. From 204- to 232-hp. V-8's, Dodge Power Giants deliver the extra power you need to handle your hauling jobs faster, with less engine strain. Naturally, less strain means less wear, fewer repairs as you pile on the miles.

See proof for yourself. Certified results of all the comparison tests are in your Dodge dealer's showroom. Look them over and we think you'll be convinced that your next truck should be a Dodge.





DODGE and competitive trucks were tested for <u>pulling power</u> by towing a special dynamometer truck. Gauges measure maximum pulling force exerted. To convert this force into pounds, gauge reading is multiplied by three.



TRUCK C, pulling the same dynamometer truck as the Dodge, was unable to equal the Power Giant mark in repeated tries. Gauges show Dodge outpulled Truck C by 32%.



TRUCK F in its turn pitted all its pulling power against the Dodge, to no avail. The sealed, accurate gauges reveal clearly that Dodge offers most "pull power" of the low-priced 3.

MOST POWER OF THE LOW-PRICED 3



BALANCE your tractor fleet

You have two general classifications of tractor work on most every earthmoving project:

① Your concentrated short-haul pushing and dozing, and ② your hit-and-run pioneering, your scattered odd-job assignments, and your clean-up and finishing operations.

Question: Which type tractor crawler or rubber-tired— will pay-off best on these basically different work classifications?

1 For most of your heavy, short-haul work . . . for push-loading large scrapers . . . dozing in slippery mud or rock-filled earth . . . and for "stay-put" work in limited areas . . . your slow-moving track-type tractors fill the bill because they have more lugging power at slow speeds.

② For work where travel range is important... for pioneering, level-

ing scattered fill, towing "part time" scrapers, stockpile clean-up, maintaining haul and access roads, handling finish-grade dozer service, and doing dozens of "chores" scattered over a wide work area... your best bet is today's improved 210 hp, 17 mph, rubber-tired Tournatractor®.

Question: How to balance your tractor fleet for maximum profit?... How many on crawlers? How many on rubber?

Because every job is different... because every project varies in the amount of short-haul, and scattered operations... there is no established pattern to follow... no fixed percentage that we could recommend. There are contractors who say a tractor fleet should be evenly balanced, half "track" and half "rubber". Others say one in three should be rubber... or even one in four. We

know owners who have found that one Tournatractor handles the work of two crawlers on their particular operations, and have gone all-out for "rubber". We know, too, that there are some operations where rubbertired tractors can't work as well as crawlers. So let's be realistic.

Basically, you don't give a hoot for any kind of tractor unless you're convinced it will "pay for its oats" ... with a comfortable profit margin. Before buying any tractor you will find it to your advantage to study carefully the following phases of your work requirements.

Question: What percentage of work hours do you have for slow, heavy-lugging traction? — What percentage of hours for scattered work, where speed and mobility can save you time, and money?

Answers to these questions vary in different types of jobs, materials to be moved, work areas to be covered. size of cuts and fills to be worked. No "formula" answer can be arrived at. There is a middle ground where rubber and crawler traction more or less offset each other in advantages, so you don't need to work out an exact formula. Start with a small percentage of rubber-tired tractors where you obviously need the maximum in speed, maneuverability, and mobility. Then extend your rubbertired percentage as you find it profitable for your operations.

Since crawlers have followed pretty much the same pattern in design and construction for the past quarter century, you are familiar with their use and application. But since heavy-duty, rubber-tired tractors came into extensive use in the earthmoving field only in recent years, there may be operational characteristics about this type of machine which you would like reviewed. Here are a few quick facts about our Model C Tournatractor that may be helpful to you:

210 hp - choice of Cummins or GM diesel engine.

Power-shift transmission, constant-mesh type, with single-stage type torque converter.

Skid-steer, controlled by tractor's big air-actuated clutches.

Tires, 21.00-25, 16-ply rating, standard; wide-base, 26.5-25, 14-ply rating. optional. Choice of Traction or Rock Service treads.

Length $-15'1\frac{1}{2}''$, width -10'6'', height, to top of exhaust-stack -8'111/2", wheelbase — 6'0", groundclearance-131/2", weight-approximately 30,000 lbs.

Advantages:

- 1. Drawbar and traction to equal crawlers of comparable engine horsepower when working the tractor at speeds above 2 mph.
- 2. Mobility to move anywhere under its own power. A mile is less than 4 minutes away! And Tournatractor travels twice as fast as crawlers to reach on-the-job assignments ... to help meet emergencies of job or weather . . . helps step-up production on sections behind schedule.
- 3. Roadable to travel anywhere. With rubber-tired mobility you eliminate the need for lowboys to haul the tractor to other job sites. You save the cost of extra manpower and equipment.
- 4. Speed: With power-shift transmission, speeds change instantly,

the 500 or more moving parts in the average crawler linkage, you step right out and GO.

- 5. Operation of power controls is fast and accurate . . . with simple, time-proven, electric motor-control system. Touch a switch, motor reaches 1800 rpm from standing start in 1/5 second; reverses for full power in 1/4 sec.! There is no pause to "feel-in" clutch, no waiting for hydraulics to build pressure. Action is instant and easy. Operators "take" to Tournatractor like ducks to water. They like its speed, its quick-stop brakes, its push-button handling.
- 6. Maintenance: Owners all over the world report their maintenance costs on Tournatractor are 1/4 to 1/2 the cost of crawler maintenance. The reason is obvious:
- 4 wheels with tires replace more than 500 track parts that wear out and must be regularly replaced.

Because of fewer lube points, Tournatractor cuts daily lubrication to less than one-half the time for a crawler-tractor.

Electric controls vs hydraulics? . . . not much maintenance on either in their present state of perfection.

Parts stock?...substantially reduced for rubber-tired tractors as compared to crawlers.

When working toward the proper balance of crawler and rubber tractors for your operations, keep in mind the growing importance of speed and mobility needed to handle today's bigger and faster dirtmoving jobs at a profit. Tournatractors and crawlers can be teamed in proper balance to handle your work at lowest cost . . . using crawlers to "lug" and Tournatractors to "run". On the next 4 pages, read typical examples describing ways your work-and-run tractor-on-rubber balances your heavy-duty tractor operations for maximum pay-off.

for extra profit

Four gears forward through standard torque converter, to 17.2 mph; two reverse to 7.2 mph.

Multiple-disc air brakes on all 4 wheels, with 3,762 sq. in. braking surface. Mechanical parking brake. save as much as 80 minutes per 10-hr. day on dozing or pushing applications. Gear ratio provides effective speed-and-power relationship, with minimum slip and heat in torque converter. Anti-friction drive gives quick acceleration. Without the drag of setting into motion

Clears right-of-way for production earthmovers

While your heavy-duty crawlers grub out rocks and stumps, break up shale, and loosen hardpan, there's plenty of widely-scattered pioneering where rubber-tired Tournatractor can save time ... and get your production haulers started to work earlier. Use this fastmoving machine to pile trees and brush, clear turn-ground greas, push aside scattered boulders and debris. Use it to build and maintain access roads, cut drainage ditches, to keep your borrow pits and haul roads dry. Well-maintained haul roads mean faster pay-dirt travel, higher profits.





advertisement

Handles clean-up around shovels

Two shovels, each working in blasted rock at opposite ends of an 800° cut. Turn-around areas are narrow. Clean-up at both shovels, a problem. To tie-up two crawlers, one at each shovel, is expensive. To transport one crawler back and forth over the hump would be time-wasting, expensive, and hard on the tracks. So you send in one man on one fast, rubber-tired Tournatractor®, Making its own road over the rocky hill, this sure-footed tractor shuttles back and forth fast between shovels, handles all clean-up, has time between runs to do a little land clearing, road maintenance, and drainage. May even have time for other odd-job services that put extra dollars in your packet!



Your big scrapers, carrying capacity loads, are cutting mucky haul road with deep, slippery ruls that slow production cycles. Tournatractor, pulling 4-drum sheep's foot roller on fill a mile away, is called to drop the pin and get on the job. In 5 minutes the fast, rubbertired tractor goes to work regrading the damaged haul road. With quick forward passes, and fast reverse, Tournatractor dozes in fresh fill on mucky stretch, levels surface, cuts a trench to improve drainage... and production scrapers get back an schedule. Tournatractor returns as often as needed to regrade and drain the mucky road, taking only a few minutes from its regular assignment to keep the big machines houling at top capacity.





BALANCE your tractor



Repairs access road to isolated farm

Farmer's access road 5 miles down the pike washed out. He can't get his pick-up out to the road, can't move his cream and produce to market. He's mad! He calls your boss, the highway department, he screams. You get word to your Tournatractor operator. He's on the job in 20 minutes. Road is repaired in 20 minutes. Your one-man emergency crew is back on his regular job in 20 minutes. One man, one hour, and the farmer is happy! Next day you patrol the project for other possible wash-outs. Find a few week spots. Dispotch Tournatractor to make "prevention" repairs. Jobs completed in short time. You've saved money, made many friends.

Stockpiles materials, spreads sub-base

Crushed stone has been unloaded at rail head...material must be cleared from tracks, dozed into stockpile 150 ft. away. Tournatractor, banksloping on new highway-cut $4\frac{1}{2}$ miles away, is assigned to job. It arrives in 22 minutes. Big dozer blade averages $2\frac{1}{2}$ cu. yds. per pass. Machine pushes average 150 ft. in 34 seconds...returns for new bite in 18 seconds. Tractor heaps material into well-trimmed stockpile for clean storage and easy pick-up by loader. Tractor an rubber then runs to new assignment 2 miles away, where it goes to work spreading crushed-rock sub-base for new highway. There's always plenty of work for Tournatractor...plenty of ways it can help to speed up your tractor applications.

Big 2-ft. wide tires aid compaction

Material on fill is piling up fast. It needs continuous compaction in order not to delay scraper cycles. Tournatractor, pulling 6-drum sheep's foot roller, goes to work. With dozer blade, machine levels high spots ahead as it pulls the 35-ton tandem rollers. Big 2' wide tires add 20-ton compaction in tire tracks ahead of rollers. By making successive passes to lay down tire tracks side-by-side, ground pressure of tires supplements roller compaction very effectively. Valuable time is saved in meeting compaction specifications...scrapers continue on uninterrupted schedule. Tournatractor easily pulls multi-drum sheep's foot units or 50-ton rubber-tired compactors. Its ready maneuverability, plus extra speed when needed, makes for orderly scraper spreading at all times. In this, as in many other applications, the speed and mobility of Tournatractor can boost your profits.



Cuts emergency drainage ditch

Rain forecast for tonight...could easily flood poorly drained cut in spongy clay, could side-line your production fleet for days. Tournatractor, at work on land-clearing job 2 miles away, is called upon to correct the situation. In 10 minutes, fast-moving tractor is at new assignment, digging emergency drainage ditch, smoothing the cut and haul roads to eliminate water pockets. No production delay today... and come heavy rains tonight, the dirt will still roll on schedule tomorrow! This job finished, Tournatractor heads for the next... and the next. It's the busiest tool in your fleet, doing a variety of jobs, saving you money, increasing your daily profits.



fleet for extra profit . . .



Balances production-cuts time lost in moves

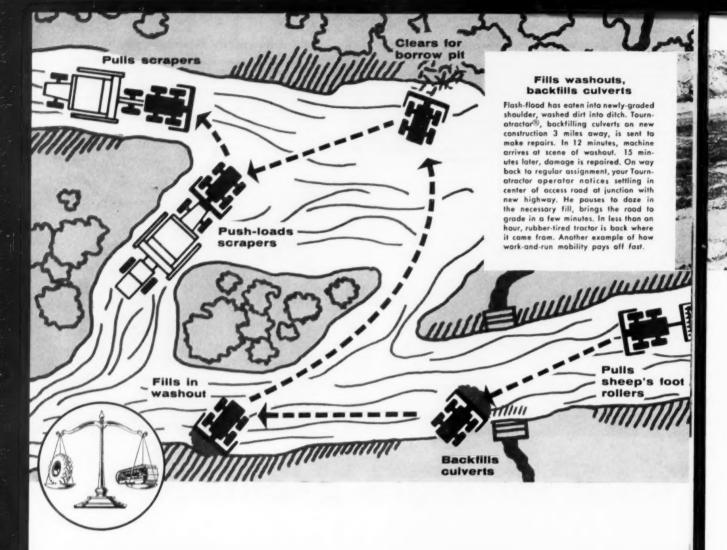
When moving production fleet ... self-propelled scrapers roll fast and easy over highway or right-of-way to new work area. Tournatractor rolls with 'em. Without waiting for crawler pushers, which must be loaded on flat-beds, hauled to the job sile, and unloaded, your scrapers can begin work on arrival ... with drive-in Tournatractor pushing. In this surface-skimming operation, Tournatractor will beat crawler-pushers any way because if maneuvers faster, gives scrapers a faster runing start. At least an hour or so of profittoble production is gained before slower crawler-pushers arrive. And, when short hauls bunch-up your scrapers in the cut, there is no need to lose production and profits. Just drive in Tournatractor. This speedy tractor will quickly balance your pusher operation 'till longer hauls get your production fleet back into an efficient spacing.



Dozes short-haul dirt for plus profits

A property awner near your job wants land leveled for building site, or drainage, or to enrich a farm field. You "barrow" Tournatractor from production fleet to do this job which may be several miles away. Traveling over highway, through city streets, fast, rubber-tired tractor can be at work site 4 miles away in 15 minutes. Machine goes right to work. Say the job is to stackpile topsoil. ...cut down some high spots ...daze shorthaul dirt to fill a small ravine ...level surface to grade ... then spread topsoil. Whole job takes only a few hours ... fast-working and traveling tractor is back at main assignment with no delay to the main job ...has earned \$75 or so extra pay!

-more on following 2 pages



BALANCE your tractor fleet

continued

If you are double-heading pusher units...

Ta get capacity loads, fast, for your biggest scrapers, use this LeTourneau-Westinghouse 420 hp, rubber-tired Twin-C* pusher. With its 40 tons tractive weight, four-wheel synchronized drive, with power-transfer differential, speeds to 20 mph, 7' high and 2½' wide tires, this machine develops 64,500 lbs. drawbar pull. It takes the place of tandem-pushers, gives you the economy of one-man, one-machine operation. With kingpin electric-steer it maneuvers fast, makes 60° turns right or left, lines up faster than any pusher you ever saw. Get full details on Tournatractor's big brother, the Twin-C.



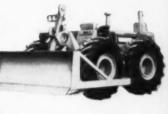


Broaden your base for bigger profits with these Tournatractor attachments

BULLDOZER

Blade with flow-contour reduces power required for pushing. Live load rolls ahead with less drag. Electric down-pressure standard,





ANGLEDOZER®

Four-way power adjustment permits blade to be tilted up and down... forward or back on either side. Excellent for side-bill work

Torque converter and constant-mesh transmission are standard equipment on Tournatractor. Their cost, together with their *plus* performance, is included in the standard price. *Job-rated* tires, 21.00-25, 16-ply, are included. *Wide-base* tires (26.5-25) for extra traction and flotation, are available at nominal cost.

How about a tractor demonstration?

The best way to judge a machine is to see how it can work for YOU. We suggest you give Tournatractor a look. Let us give you a list of owners. Talk to them, talk to their operators and mechanics in your area. When Tournatractor is not busy with "emergency" service, work it alone, or team it with your crawlers. Get the "feel" of its ability to handle most tractor assignments on your jobs in less time, and at a bigger profit. See how much more work you can do when your trac-

ROOT RAKE

Husky, alloy-steel teeth "comb" the ground, ripping out roots and rocks, leaving the earth in place. Carries load to spoil pile, sheds readily.



PUSH-BLOCK

Heavy-duty bumper and push-plate provides large, smooth surface for quick, accurate contact.

for extra profit

tor fleet is balanced... with tracks to "lug" and rubber to "run". Ask for a Tournatractor demonstration. Or add one as a test to your crawler fleet. You can't go wrong with one of these high-speed tractors for the trouble-shooting assignments on your job.

Your nearby LeTourneau-Westinghouse Distributor will be pleased to survey your job problems and point out where Tournatractor can help you most. He'll be glad to arrange a demonstration whenever — and wherever — it suits your convenience. Ask him, also, for your copy of our free booklet, "Tournatractor, and the 4 dimensions of today's earthmoving".

Note: If you would like extra copies of this 6-page pictorial on how to apply "rubber" for bigger pay-off on your tractor fleet for your staff, or for a discussion meeting, please write stating quantity desired.



POWER-CONTROL UNIT

Rear-mounted single or double-drum electric, enables Tournatractor to operate any cable-operated scraper through push-button controls.



Reaches high up on trunk to rip trees from ground. As load increases, angle of push puts downpressure on tires, increases fraction.



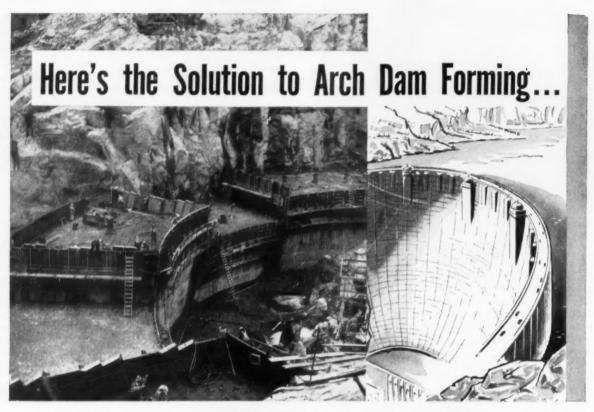
*Trademark CT-1517-DC-6



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



One Form Design by BLAW-KNOX can be Shaped to All Surfaces

Can be Curved . . . Twisted . . . Warped . . . Convex or Concave

Special forms developed by Blaw-Knox Steel Forms engineers can be adapted on the job to fit all the contours, on both upstream and downstream surfaces of arch dams. A special jack screw arrangement allows the forms to be curved, twisted or warped when they are set to fit convex or concave surfaces.

Such forms are being used very successfully on Donnells Dam in California. This dam is a thin concrete arch—ranging from 10-ft. thickness at the crest to 41-ft. at the base and rising 290 ft. above the streambed level. It is set on a concrete foundation that extends more than 180 ft. below streambed to bed rock. When completed the dam will be the farthest upstream of the three dams in the Tri-Dam Project which will supply water for irrigation and electric power. The project is a cooperative program for the Oakdale and San Joaquin irrigation districts. The Tri-Dam Project is a

joint effort of a combination known as Tri-Dam Constructors that is headed by Morrison-Knudsen Co., Inc. and includes Macco Corp., Peter Kiewit Sons' Co., and Stolte, Inc.

In addition to the adjustable features of the new form panels that allow them to be used over and over again on all parts of the dam, they include the other features that have made Blaw-Knox Heavy Forms the standard on all large concrete projects. Their special design allows them to be used interchangeably on many parts of the job and their adjusting screw system assures fastest setting and stripping.

If you are contemplating arch dam work or any heavy concrete project be sure to call on the Blaw-Knox Steel Forms Consultation Service during the preliminary planning stage. You will be assured of simplified, fast forming that increases your profits by reducing time, labor and material costs.

BLAW-KNOX COMPANY

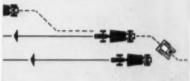


Steel Forms Department • Blaw-Knox Equipment Division

P.O. Box 1198 • Pittsburgh 22, Pa. • Phone: Sterling 1-2700



How to improve timing for more yards per day



Whenver you see a line of scrapers waiting for the pusher (or a line of trucks waiting at the shovel) you are watching good dollars go down the drain. It gives the waiting operators time for a cigarette, but...for the guy who pays the bills...it's time for aspirin.

Next time it happens to you, here are some ideas collected from other contractor-owners that may be of help.

- You may, of course, have an unbalanced fleet . . . not enough pusher-capacity for size of your scraperfleet and length of haul. If you are sure that's the problem, maybe you can dig up some extra pusher help 'til the haul lengthens out for balanced operation. If you have a high-speed, rubber-tired tractor, or a near-by crawler, or a grader with push-plate, move one of these in for temporary pusher service. It's cheaper to have an extra pusher waiting a bit between loads than having 2 or 3 scrapers waiting for a pusher. Or, if you can't help with an extra pusher, perhaps it's a good time to send your scrapers in to the shop, one at a time, for a tune-up.
- 2. But, remember, it is also possible to have haulers waiting on a perfectly balanced operation. That may be due to a lot of things...but once bunched, they tend to stay bunched. So, at the borrow, speed up that lead machine by cutting his load a little

light. Then slow down the tail-enders by piling on an extra yard or two.

- 3. On the dump, spread the leadscraper load close in, send the others as far out as you can use dirt.
- Tell lead-scraper operators to "dump her fast and deep"...never mind the spread. Then spread that lead-load with one of the tail-enders after it dumps its own load.
- 5. Have scrapers that are trailing the parade slow-up to smooth the haul-road on return trip. Incidentally, a good, fast haul-road pays for all the cost of maintenance in extra yards delivered and reduced machine repaircosts. Operators also give better cooperation when they have good smooth roads for hauling.
- Check the "slow" scrapers that are holding up the parade...be sure they are mechanically in good order and able to "keep up". Maybe you can switch operators from one of the fast "tail-enders" with the slow-going "leader". This may help uncover a sluggish machine or inspire better effort from a slow operator. If you find you have a slow machine, take it out of line and get it fixed!
- 7. Do all you can to develop "teamwork" among your operators. Sell them on synchronized cycles with even spacing at maximum speed. Post rec-

crds for daily production. Consider a team prize or bonus for beating previous production record. Build any bonus system on "team" performance, not on individual output. Discipline of fellow workers is far more powerful than that of a hell-raising boss.

If you would like copies of this article for distribution within your own organization, drop us a line and we'll be glad to send any quantity you need. An editorial article on this important subject will appear in Co-operator, our own magazine for operators and mechanics. Copies of this publication will be mailed to your operators if you will send us their names and addresses.



Smaller scrapers can be push-loaded by graders as well as crawlers and rubber-tired tractors. Here a large Adams grader, equipped with push-plate, helps D Tournapull pick up capacity load at housing project site.

Tournapull—Trademark Reg. U.S. Pat. Off. 1580-DC-1



LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



New Pennsylvania Turnpike Tunnel Links Philadelphia and the Poconos

A major link in the Northeastern Extension of the Pennsylvania Turnpike between Philadelphia and the North is the new Lehigh Tunnel through the Blue Mountain west of Palmerton, Pa. The tunnel is 4,379 ft long, and provides for two lanes of traffic, separated by a concrete divider. The interior finish is tile, and illumination is furnished by some 800 fluorescent lights.

In all, more than 37,000 cu yd of concrete were placed in the tunnel, including the roadbed. Bethlehem supplied a number of steel products for the tunnel as well as for all sections of the Turnpike, including reinforcing bars, bar mats, dowel units and other highway steels.

The Northeastern Extension of the Turnpike starts at Plymouth Meeting and presently extends to Wilkes-Barre. It provides access between the Philadelphia metropolitan area and the industrial, farming, and Pocono Mountain resort areas to the north.

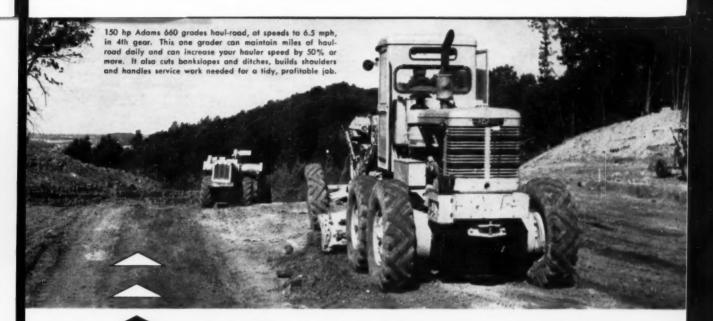
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem graducts are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor—Bethlehem Steel Export Corporation

BETHLEHEM STEEL





How haul-road maintenance can increase your profits

The hauling phase of your scrapers or trucks accounts for the largest percentage of time on most dirtmoving cycles. With a planned haul-road maintenance program - handled by 1 man, 1 grader, a few hours each day - you can cut cycle time and add bonus dollars to your profits. Here's why:

BEFORE CONDITIONING More trips 8.3 mph 10 cu. yds. per AFTER CONDITIONING hour -mile haul 14.0 mph

Diagram shows how regular maintenance on a 1-mi. haul-road permits scraper to travel 69% faster. Result: more trips, for a production increase of 55%, or 22 yds. per hour.

At pay of only 30c per yard, for example, the scraper hauling on the maintained road earned an extra \$6.60 per hour. Multiply this by a fleet of 6 scrapers, 10 hours a day, 6 days a week, and you have a "bonus" of \$2,376 per week. So haul-road maintenance doesn't really cost - it saves and earns for you!

Prolongs equipment life

In addition to increased production, haul-road maintenance also prolongs the life of your equipment fleet . . . lowers servicing and repair costs, and downtime. Take tires alone damaged from sharp objects, chuckholes, etc., due to poor haul-road maintenance - can cost you thou-

sands of dollars per year for recaps and replacements. All mechanical parts of your haulers are similarly subjected to extra stress and wear. For a fraction of the cost of extra servicing and increased depreciation due to hauling over rough haulroads, you can easily pay cost of 1 man, and 1 grader to keep these roads hard, smooth, level, and well drained. Also, your maintenance grader can help out with other grading, sloping, and ditching jobs - keeps profitably busy at all times.

High operator efficiency

Your operators will work more relaxed, less fatigued, when traveling over smooth haul-roads. That means they work faster, steadier...more productively, all day long.

More grader for your dollar

When planning the purchase of a grader, it will pay you to investigate Adams* heavy-duty motor graders, built by LeTourneau-Westinghouse. All 6 Adams models (60 hp to 190 hp) give you a wider range of power and speed than competitive graders of comparable weight and horsepower. They can push bigger, heavier loads . . . make deeper cuts faster . . . finish-grade more accurately. Choice of GM or Cummins engines on 5 larger models. The largest and most powerful is the 190 hp POWER-Flow* 660, with torque-converter drive. Write for a demonstration. No obligation. Trademark G-1546-DC-1

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per



We help you "catch" more new business

When you're looking for new construction business, Dodge Reports can help you "catch" just the jobs you want . . . because Dodge Reports cover the whole field of construction, tell you precisely what jobs are coming up and when. In addition, they tell you whom to contact and when bids are wanted (even who's bidding). If you'd like to see how you can get more and better business right in the area you serve, then read and mail this coupon today.

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Yes! I'd like to see how to get more business by knowing in advance who's going to build, what, when, where.

I want to know whom to contact and when to submit bids.

I'd like to see some Dodge Reports, and I'd like a copy of your booklet that tells how to use this accurate, daily, up-to-the-minute construction news service.

I understand that I can pick just the area in the 37 Eastern States and the type of construction activity that interests me. Also, that I won't have to wade through mounds of data to find the information I need.

I'm interested in General Building House Construction	on Engineering (Heavy Construction)
in the Following Area:	
NAME	The same of the
ADDRESS	
CITYZONESTATE	Dodge Reports For Timed Selling to the Construction Industry



35-ton Rear-Dumps "move maximum loads in minimum time"

on St. Lawrence Seaway

Building the St. Lawrence Seaway, connecting the Great Lakes and the Atlantic Ocean for sea-going vessels, has presented many tough obstacles to the contractors' construction crews, both in Canada and the United States.

Excellent progress has been achieved at Lock Côte Ste. Catherine, across the river from Montreal. This project, too, has been troubled — by weather, icing, lighting problems involved in day-and-night operation, and by the many difficulties inherent in day-to-day problems of a marine construction job. In spite of these factors, Canamount & Canit Construction — a combine of Deschamps & Belanger Ltée, Dufresne Engineering Co. Ltd., A. Janin & Compagnie Ltée, the Key Construction Ltd., and Canit Construction



Ltd.— is working successfully on its contract with the St. Lawrence Seaway Authority of Canada. Time schedule has been accomplished satisfactorily although the project is a demanding one.

The lock, turning basin, and related dikes involve the excavation of more than 4½ million cubic yards of earth overburden, and shale-rock — plus the placing of 350,000 yards of concrete.

Excavate below water line

Some excavation is below water level, so cofferdams had to be built, and the areas pumped dry, before work could begin. During the winter of '55-'56, with earthmoving progressing well in the pit behind the cofferdams, slabs of floe ice from the river catapulted over the embankment and into the pit. Removal of the ice was an added expense and delay. In spite of difficulties like this, the job proceeded ahead of schedule.

Maintains roads for best production

Making a major contribution to moving overburden at a faster-than-scheduled rate, are eight 35-ton Model B Tournapull® Rear-Dumps with 27 yards heaped capacity. Says Project Manager M. Kazanovitch, "They move maximum loads in a minimum of time."

He is a firm believer in steady, consistent production rather than speed records, and

has equipped all haul units on the project with governors set at 20 to 25 mph. Although his "B's" with top speed rating of 34.4 mph are cut back approximately one-third, they regularly complete excavation haul cycles in 10.58 minutes over a one-way distance of 4700 ft. A 550 Adams motor grader constantly maintains haul roads, so equipment can always travel at its top governed speed.

B Rear-Dumps, working on St. Lawrence Seaway lock at Côte Ste. Catherine, carry 33 to 38 tons of shot rock. In earth overburden weighed loads averaged 34.4 tons.

Efficient in small space

For all their size (35'10" long), electriccontrol B Tournapulls can turn around non-stop in just 35' (only 27' in dump position). This is far less space than that required by any other hauler of comparable size. The Superintendent says, "Ability to maneuver in spaces is a great feature of this machine."

90% to 95% mechanically efficient

Because of methodical servicing and quick attention to minor repairs, the 8 Tournapull Rear-Dumps have maintained performance at 90% to 95% mechanical efficiency. Superintendent Kazanovitch believes that the "negligible amount of layup time" has also been important to the job's progress.

If you handle BIG yardage earthmoving, you'll want to know more about big B Rear-Dump...how it can speed your work...cut your costs. Write us for more information

Adams-Trademark BRAG-1131-D-b-5

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If your job calls for PIPE PILES

"Faster-from-Foster" service pays off in big savings!

As uses of pipe for piles increase, more and more contractors are calling on L. B. Foster Company for the best and fastest service available. These contractors know us as specialists in steel pipe for piling, in all diameters and wall thicknesses—spiralweld, electricweld, seamless, and lapweld.

On this river-span job we delivered 16-inch diameter Taylor-Forge Spiralweld foundation pipe (in

52 and 60-ft. lengths) as piling for bents of two bridges which span 135-ft. streams. While we are constantly supplying scores of small jobs every day, we'll also deliver all the material required for even the biggest jobs . . . to your job site, and . . . on schedule. No delays for you, no storage problems, more savings.

Send for Foster catalogs-yours for the asking.



PITTSBURGH - NEW YORK - CHICAGO - HOUSTON - ATLANTA - LOS ANGELES
STEEL-SHEET PILING - II-BEARING PILE - STEEL PIPE - RAILS - ALUMINUM PIPE - ALUMINUM BRIDGE RAILING

Working from barges. Brennan Brothers of La Crosse, Wisconsin and Lansing, Iowa placed spiralweld foundation pipe in 8 feet of water, then had to drive through 40 ft. of Mississippi River sand, clay and mud bottom. Piling, supplied by L. B. Foster Co. was concrete capped, each measured 26 x 3 x 2 ft.

Construction Methods AND EQUIPMENT

AUGUST, 1957

VOLUME 39 . NUMBER 8

HENRY T. PEREZ, Editor

There Should Be More

A NEW STATUTE has just been entered into the law books in the Commonwealth of Pennsylvania. It should be encouraging to all contractors—if they are willing to work to try to get similar legislation passed elsewhere and covering other types of jobs.

The law deals with retained percentages on state highway work. Basically, it calls for reduction of the retained percentage from 10% on current estimates throughout the job to 10% on current estimates only until 50% of the project is completed. Thereafter, no further monies will be retained. And the law also provides that the State Highway Department shall pay the contractor 5% interest on unpaid final estimates retained more than 90 days after completion and acceptance of the project.

In effect, then, the law cuts the retained percentage in half, giving the contractor a 5% increase in working capital on the job. And the interest payment proviso helps to compensate the contractor for having the state tie up his money an unnecessarily long time.

Now, the earlier experiences of contractors bidding on Pennsylvania highway work (where final payments were sometimes held up as long as 30 months, according to the Associated Pennsylvania Constructors) were certainly not unique. Nor are the inequities the new law seeks to solve confined to state road jobs alone.

Similar relief is needed—and is just as fairly applicable—to all types of construction operations. It should be extended to all public works: federal, state, and local. And private jobs could benefit too.

But this will not come about by itself. That the Pennsylvania legislature passed its bill unanimously was no accident. It was the result of long and hard promotion and educational work by contractors' associations, individual construction companies, equipment distributors, and by others who have a stake in the highway field.

If similar enlightened legislation is to be extended to all areas—both geographically and by type of job—much more dedicated work is needed. Sometimes it will be a slow and discouraging job. Yet only by chipping away unfair or outmoded contract provisions can the contractor gain this increase in working capital, which is rightfully his in the first place. And in so doing, he will reduce his borrowed financing costs and thereby help the project owner, too.





HAMMER-GRAB weighs about 3,000 lb and takes a bite of 50 to 100 lb of earth.

BENOTO machine digs shafts of 20 to 40 in. dia to a maximum depth of 350 ft.

Mobile Rig Digs Deep Caissons

A CAISSON BORING MACHINE developed in France is proving a versatile, high speed producer on its first trial in the U.S.

The rig is the Benoto deep caisson excavator. It is digging 57 caissons 115 ft deep and 40 in. in dia for a 40-story apartment building in Chicago.

The Benoto moves about the excavation under its own power, digs the deep holes with a hammer-grab (casing them as digging progresses), places reinforcement cages, and pulls the casing. Lake States Engineering Co. of Chicago, foundation subcontractor on the Chicago apartment job, is completing each of the deep caissons in 15 to 20 hr with a crew of four or five men. On this job, the Benoto digs through about 60 ft of soft blue clay, 20 ft of hard clay, and 30 ft

of hardpan in reaching bedrock.

The rig is hydraulically operated and powered by a 120-hp diesel engine. It can bore shafts of 20 to 40 in. dia to a maximum depth of 350 ft. The machine is a product of Societe Benoto of Paris, France. It is distributed in the U. S. by Benoto, Inc., 224 S. Michigan Ave., Chicago.

The machine simultaneously digs and cases the hole. Casings are 20-ft lengths of rigid steel tubes 40 in. in dia. The bottom of the first length has a cutting edge; machined rings at the top and bottom of other lengths make it easy to add new lengths of pipe as the casing goes down.

Two pairs of hydraulic rams force the casing into the ground. One pair delivers a constant semirotary motion through a clamp collar; the other thrusts the shell down during digging and pulls it when concrete has been placed.

The combination of vertical and semi-rotary motion minimizes friction between the casing and the ground around it during driving. To pull the casings, the pair of rams that delivers vertical thrust moves the shell alternately up and down a short distance to corrugate the outer surface of the unset concrete and force it into voids in the surrounding ground. This increases skin friction and carrying capacity of the raisson.

Lake States Engineering Co. generally keeps the cutting edge of the casing 3 to 4 ft below the level hit by the hammer-grab in order to maintain a plug at the base of the shaft that will prevent water from rushing into the shaft. But, according to the manufactur-



HYDRAULIC RAMS on either side of rigid steel tube force the casing into the ground by reacting against a clamp collar. Sections of the casing tube are 20 ft long

er, in certain types of hard and dry material it may be more efficient to work the hammer-grab a little lower than the cutting edge to make it easier for the shell to penetrate into the ground.

The hammer-grab weighs about 3,000 lb and operates like a clamshell or orange-peel bucket, depending on the material being dug. For soft material it carries two hemispherical jaws; for hard material there are three pointed jaws. When the jaws are open (while the hammer-grab is dropped), they almost touch the side of the casing. The upper part of the hammer-grab is fitted with guide bars so the unit remains almost vertical in the shaft, yet has enough clearance to turn and to tilt slightly to aid digging.

Ordinarily the grab's jaws dig and close as the unit is hoisted by cable from the rig above. However, they can be locked open so the heavy hammer-grab can be used as a pick to break up hard material by dropping it several times before each bite. On this job, the hammer-grab takes a bite of 50-100 lb depending on the material being dug.

The heavy hammer-grab, dropping through the casing, cuts through any type of material—even hard rock. In fact, it is usual practice to dig a foot or two into bedrock to provide an anchor for the caisson. The hammer-grab discharges muck into a chute. Ordinarily, the chute would deliver muck directly into a truck for removal, but working space is too cramped to move trucks through the job. An Allis-Chalmers HD-6 tractor shovel moves accumulated muck out of the way.

Mobility

The Benoto rig walks about the job on a system of rail wheels and skids propelled by rams. Hydraulic jacks and shoes at each corner level it into position.

The undercarriage of the machine consists of two full-length steel-plate skids. To each of these are fixed two parallel, longitud-mal rails. The upper works is fitted with four lines of wheels that ride on the rails. Double-acting hydraulic rams attached to the main frame individually control the location of each skid with relation to the upper works.

To move the machine, its four corner jacks are first extended to lift the rig clear off the ground. Then the rams push the suspended skids forward. When the jacks have again lowered the unit to the ground, the rams retract to pull the upper works ahead to its new position. Maximum distance of travel for each thrust of the rams is 5 ft.

If both rams operate with the same thrust, the machine moves in a straight line. If one ram moves faster than the other, the machine travels in a curve. When one ram moves forward and the other backward, the machine pivots around its center. It also can move sideways by action of the four corner jacks, which are attached by a knee-like linkage.

Total weight of the Benoto machine is about 34 tons. When riding on its skids, it exerts a pressure on the ground of about 625 psf. This low ground pressure enables the rig to move about in soft mud, a capability that was fully tested on the Chicago apartment job when heavy rains turned the excavation into a quagmire.

When the casing reaches bedrock, a man goes down to inspect the bottom of the shaft before concreting begins. Lake States Engineering Co. first checks for



CUTTING EDGE on lower end of first casing section can slice through hardpan.



CONCRETE TRUCK backs up to the caisson digging machine and dumps directly into the open shaft casing. The 11 cu yd of

concrete the truck carries fills 44 ft of the 40-in. dia shaft. Crew of four or five completes a 115-ft shaft in 15 to 20 hr.

RIG DIGS CAISSONS ...

continued

combustible gases with a Mine Safety Appliance Explosimeter. And it equips the shaft inspector with a MSA Chemox self-generating oxygen breathing apparatus, and a safety harness.

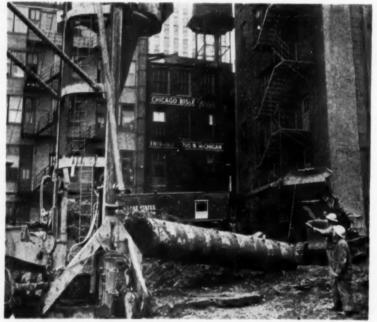
Concreting goes fast. Readymix trucks discharge directly into the open steel shells. A truck with 11 cu yd of concrete fills 44 ft of the shaft. A head of wet concrete ranging from 10 ft to as much as 45 ft above the bottom of the cutting edge always is maintained as the casing is being withdrawn.

Safety

A feature of the Benoto operation is that no caving, crumbling, or other ground movement is possible. Accelerometer tests in adjoining buildings while the hammer-grab was in operation showed less vibration than that caused by passing busses on the street in front of the site.

The operating engineer controls the hammer-grab from the cab of the machine. And little or no hand excavation is necessary, so workmen are not exposed to noxious or combustible gases.

General contractor for the 40story apartment building is the



CASING is pulled by a pair of hydraulic rams that move the steel tube alternatively up and down a short distance to corrugate the outer surface of the unset concrete.

Rover Construction Co. of Chicago. Edward J. Archibald is superintendent for Lake States Engineering Co.

Because this is the first U. S. test of the Benoto rig, its opera-

tion is followed closely on this job by Louis C. Ravet, president of Benoto, Inc., and by Pierre Allard, Jr., son of the inventor of the machine and an officer of the U. S. company.



FOUNDATION of Texas Tower No. 4 consists of three big caisson legs assembled into a tripod unit on shore and floated to the erection site off the New Jersey shore.

New Texas Tower Goes to Sea

TEXAS TOWER NO. 4, newest of the "radar islands" that guard the U.S. against surprise air attack, stands firmly planted in 180 ft of water off the coast of New Jersey. But it took some doing.

The legs of the tower are three 450-ton caissons 12 ft 6 in. dia and 314 ft long, spaced on 155-ft triangular centers with intermediate bracing. They support a triangular platform that contains the radar equipment and living quarters for Air Force operators.

The first of these offshore radar platforms were designed for shallow water. They were assembled completely at the shipyard and towed into position with the caisson legs extending upward from the corners, ready to be jacked down into the ocean bed.

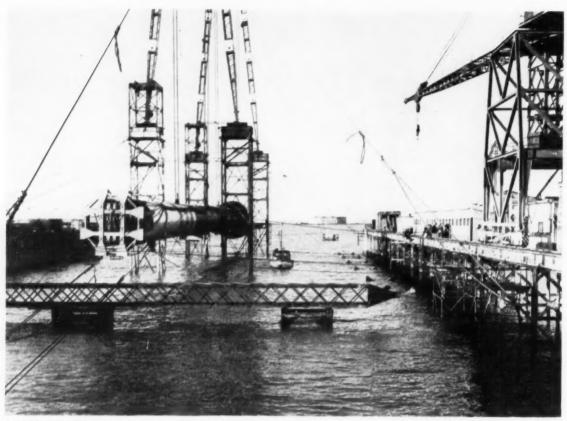
The deep water tower is something else again. To provide the necessary cross-bracing between the long legs, both the joint venture general contractor and the subcontractor for fabrication of the supporting structure had to pioneer new techniques.

General contractor is J. Rich Steers and Morrison-Knudsen with Earl Lawson of Steers as project manager under Eugene Rau, vice president and chief engineer of Steers. Continental Copper and Steel Industries, Inc., fabricated much of the tower.

continued on next page



SUPERSTRUCTURE is a two-decked triangular platform measuring 200 ft on each side that will stand 65 ft above sea level on the tripod legs and house a 70-man crew.



OUT OF THE WATER—Rigging equipment lifts 314-ft-long caisson a few feet up in the air. It will be set on cribbing while the two

other caissons are towed into graving dock and positioned on prepared cradles at each side of the dock.

TEXAS TOWER ... continued

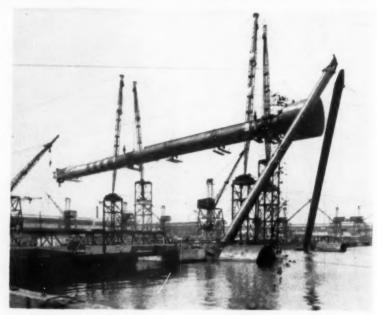
Assembling Legs Takes Record Lift

Continental decided to build the huge caissons in an horizontal position close to the ground so that they could use power rolls and automatic welding procedures and would need a minimum of scaffolding.

The ticklish part of the operation was assembling the three legs and installing the intermediate bracing. Two of the legs were positioned with little difficulty in a flooded graving dock. But the third 450-ton caisson had to be hoisted 155 ft and held in position between the other two while bracing was installed.

For this job, Continental called in The M. W. Kellogg Co. of New York to supply the equipment, engineering, and supervision. Kellogg developed the working plan for what probably is the heaviest lift ever made with temporary rigging.

The lift was made with two pairs of 112-ft gin poles set on derrick pedestals 12 ft square and



BEGINNING THE LIFT—Two vertical buoyancy struts are tilted seaward and held there by adjustable guy wires to obtain clearance for ascent of the center caisson.



BRACING IN PLACE—Horizontal bracing and a 36-ton buoyancy strut (at the far end) run between the two outside caissons, passing beneath the cribbed center caisson.



AT PEAK ALTITUDE—With caisson 160 ft in the air, the two vertical buoyancy struts are moved into position and connected. Yard cranes will place bracing struts.

64 ft high. Pedestals of each pair were 40 ft center to center, and the distance between the two pairs was 142 ft 8 in.

Each gin pole carried an eightsheave upper block and a sixsheave lower block plus an equalizer so that 15 parts of 7_8 -in. wire rope supported each of the four lower blocks. Two hoists provided lifting power. One was an American four-drum hoist with torque converter and a drum capacity of 2,288 ft of 7_8 -in. wire rope. The other was a two-drum Skagit hoist with a line pull of 133,000 lbs to 58,000 lbs in second gear and a drum capacity of 3,-700 ft of the wire rope.

In addition to the guy wires on the pedestals and gin poles, wind guys were attached to the caisson to restrict its lateral movement. The wind guys were designed to withstand the force of an 80-mph wind. The rigging included 68 main guy lines and 27 erection lines.

First the caisson was raised and cribbed just high enough to allow clearance for installation of the horizontal struts between the other two caissons. Then, vertical struts were connected to the two caissons in the graving dock. After the connections were made, these struts were tilted outward and held by adjustable guy wires to keep them clear of the path of the caisson to be raised.

The big lift started early in the morning so that there would be plenty of daylight to take care of any trouble that might develop. But the operation went off smoothly as planned. During the lift, supervisors made regular visual checks of all parts of the rigging equipment with binoculars. Deflection of the equipment also was checked with a transit.

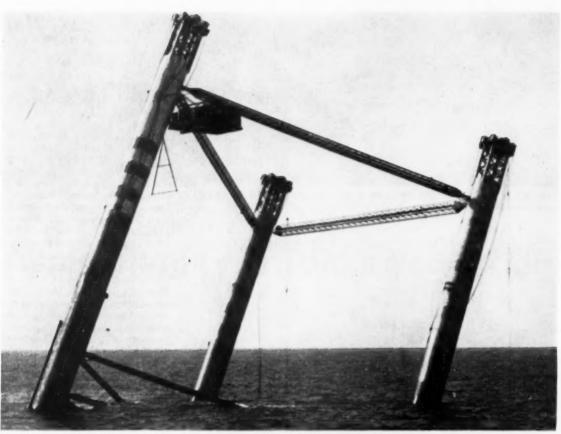
The only difficulty encountered was in getting the hoisting cable to spool properly on the drums of the hoists. When this happened, hoisting was interrupted while the drums were packed with rope ends to provide a cushion for the next layer of cable.

continued on next page

Controlled Flooding Sinks Tripod 180 ft to Bottom



Starting to tilt . . .



FINAL PHASE of sinking begins as bulkheaded compartments in upper leg are opened, and tripod assembly starts to assume vertical

position. Air in 6-ft-dia buoyancy struts which form lower braces of triangle helps control speed of overturning.

Erecting the tower in 180 ft of water was a tricky operation.

First step was to swing the giant tripod legs through a 90 deg arc and sink them to the bottom in a vertical position by controlled flooding. This operation began July 6 and was completed early the next morning. The same day, the triangular steel platform was floated up to the legs and locked in place.

Work started immediately on

connecting the jacking apparatus previously installed on the platform to cables attached to the legs so that the platform could be raised up the legs to its intended elevation above the water.

On July 8 all the jacking mechanism was connected up, and the platform was raised several feet above the water. Then, the engine driving the pump that activated the hydraulic system for the jacks broke down. Jacking had to be

suspended with the platform in a dangerous position should a storm blow up.

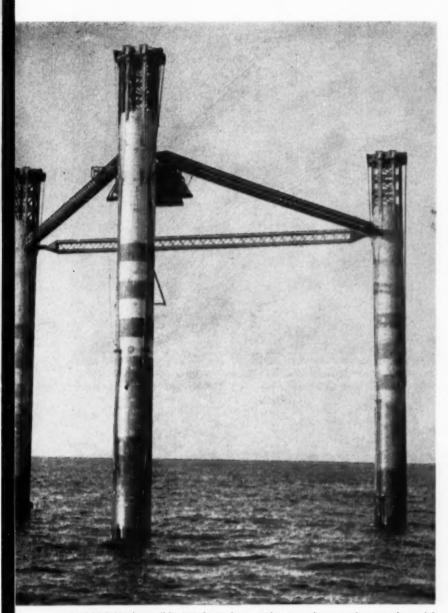
But 24 hours later a new engine arrived, and the platform was raised to 38 ft above sea level. It remained at this level for about two weeks while the legs were jetted into the ocean bottom and concreted and some additional bracing placed. On July 24, the platform was jacked to its final position 65 ft above the water.



... as water surges...



... into lower caissons.



IN POSITION, legs will be jetted into the ocean bottom and concreted to provide a solid foundation for the 4,000-ton double-deck steel platform the tripod will support.



CONTROLS for sinking operation are housed in cab hung from temporary struts.



JACKS on platform around each leg connect with cables on legs to raise platform.



EVERYTHING'S PRECAST—Except for the foundation and first floor slab, everything in two, three-story Bachelor Officers Quarters being built at Philadelphia Navy Yard is precast.

Multi-Story Precast Job Shows

PREPLANNING is the key to the rapid erection of the first multistory totally precast building in the eastern part of the U.S.

The job is the \$1.5-million Bachelor Officers Quarters under construction at Philadelphia's Navy Yard. Except for foundations and first floor slabs, every stuctural part of the two 40x200-ft, three-story buildings is precast

on the job and lifted into place by crane.

Masterminding the casting and erection of wall, partition, floor, and roof panels under subcontract to Irwin & Leighton, Inc., Philadelphia general contractor, is Lynn M. Ross, a young Lehighton, Pa., concrete contractor.

When Ross landed the subcontract for the work he knew he had a job that would prove a challenge. The two buildings stand parallel and 30 ft apart. Moving a crane around to place precast panels three stories high would be tough. And because each panel would have to be cast and erected with pin-point care, advance planning became the job's most important tool.

Ross spent a number of nights



PREPARING—Workmen get ready to pour one of six panels on casting bed. Note numerous inserts placed within the form. These include lifting lugs, conduit, and plumbing inserts.



CONCRETING—Concrete is dumped into form where power screed strikes it off.

FLOATING—Power float finish is given slab after it cures for a period of 4 hr.

a network of grade beams 1 ft thick and 3 ft high. The grade beam area was backfilled and topped with a 6-in. blanket of gravel. A heavily reinforced 6-in. concrete floor slab was poured over waterproof paper placed on top of the gravel bed.

Building the Beds

To make the panels, Ross built six casting beds. On one long side of each building, he set up a 21x121-ft concrete casting bed. These beds are used to cast 80% of the panels. Two smaller beds, 21x50 ft, stand at opposite corners on the other side of each building. Panels cast on these are used on portions of the building that the erecting crane can't reach from the long bed.

On these slabs, Ross pours the precast components that make up the three-story building. Panels for the job vary in size, Wall and



Tight Planning

burning the midnight oil with his concrete superintendent, Tom Barnes, and representatives of the general contractor. Together they preplanned the casting and erection sequence for every one of the 1,200 panels required for the job.

The careful planning now is paying off. The job—in the second-floor erection stage—runs like clockwork with 35 panels being cast daily and 25 being erected. This is done with one crane and a 15-man crew. The crew consists of a crane operator and oiler, four erection men, and five carpenters and four laborers to form and pour panels.

Foundations for the building were built by the general contractor. They are timber piles with concrete caps connected by



CURING-Each panel gets two curing treatments. Second is to prevent bond.

MULTI-STORY PRECAST...

Panel Placing Goes Rapidly

partition sizes range from 2x8 to 8x16 ft; floor and roof sizes range from 8x16 to 13x19 ft. All are 6 in. thick and finished on both sides.

Casting Procedure

Ross casts all panels in sixhigh stacks. Stacks of many different sizes are cast on each bed. These are designed to be peeled off from the top down by crane for erection.

Forming for a typical 8x12-ft wall panels consists of two plywood forms 3 ft high and 8 ft long placed parallel to each other on the casting bed. Two 12-ft lengths of 2x6's complete the form and serve as cross braces. Next placed are reinforcing steel, bracing inserts, shear pins, conduit lines, junction boxes, and plumbing sleeves.

The form then is filled with 3,000-psi concrete to the 6-in. height of the 2x6's. An adjustable vibrating screed gives the surface an initial finish. This is followed by a power floating. Workmen spray the surface with Thompson Water Seal at a rate of 1 gal for every 400 sq ft. The panel then is again power floated. Four hours later, the surface gets a second application of Water Seal at a rate of 1 gal for every 600 sq ft. This treatment prevents bond between stacked panels.

The next day, workmen erect a second tier of 2x6's and repeat the casting operation until six panels have been poured for each set of forms on the casting bed.

Erecting the Panels

At one end of the long casting bed, Ross spots a 55-ton crane with 60 ft of boom. Using a specially designed spreader-bar assembly, the crane peels the first panel off the top of the stack by lifting inserts and stands it in a vertical position over the floor slab. A workman plumbs the panel while another temporarily anchors it with a Richmond adjustable end brace. One end of the brace anchors to a spider cast in the floor slab; the other end to a spider cast into the wall panel.

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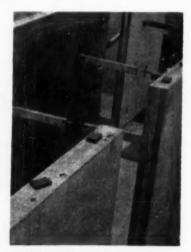
PREPARING LIFT—Workmen check planned location of floor slab before it is lifted into place. Slab is lifted with help of spreader bar bolted to threated lugs cast in concrete.



LIFTING SLAB—Crane swings slab into position over temporarily braced wall panels. Erection crew will shimmy it into exact final position with steel pinch bars.



SETTING SLAB—Workmen hold slab in position until crane releases it on walls.



BUMPERS—Rubber blocks atop wall panels will absorb shock of concrete floor weight.



Teer's CAT" No. 12s help build approach to Patapsco River Tunnel

An important new highway link for North-South travel is the Patapsco River Tunnel, south of Baltimore, Md. It will create a direct connection between Rt. 40 and U. S. 1 without bucking mid-city traffic.

Nello L. Teer Co. of Durham, N. C., is building a 2½-mile section of the four-lane divided expressway leading to the tunnel. The contract calls for moving 1,200,000 cubic yards of earth. Teer's spread on this job includes 12 Caterpillar DW20 Tractor-Scraper units, six D8s, a D9 and two Cat No. 12 Motor Graders.

Good haul roads contribute to low-cost earthmoving, and keeping roads in shape is a motor grader job. With its rugged construction, balanced design and dependable four-cycle Cat Diesel Engine, the No. 12 is built for top production around the clock. Positive-acting controls, easy blade positioning and excellent job visibility all help the operator do more work with less effort. The exclusive Caterpillar oil clutch operates smoothly many hundreds of hours without adjustment. Tubeless tires, at no extra cost, reduce tire down time. And in-cab starting, electric or gasoline, is standard.

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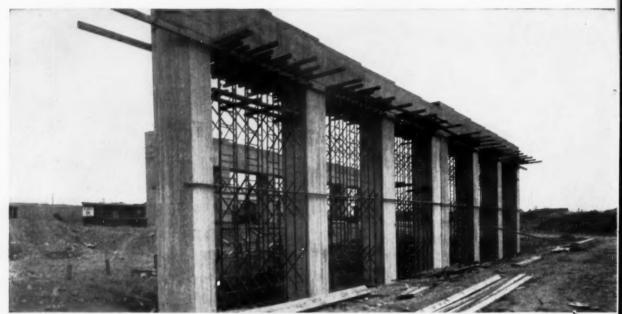
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NEAT, QUICK SUPPORT—C. J. Meany Co., contractor, gets quick support for beams on bridge piers with minimum equipment at substantially lower forming costs. He uses "Trouble Saver" Steel Shoring for an overpass bridge on the new Northeast Expressway, Revere, Mass. 24 6'6"-high ladder frames spaced 3'7" apart, are

rapidly erected to provide neat, ample shoring for each 3'6" wide, 4' deep, 13' long concrete beam section. The 2'-wide ladder frames give workers immediate access to the top for fast forming work. By using versatile, prefabricated steel shoring, instead of wood, forming costs are cut at least 25%.

Familiar Scaffolding



PREFAB SHORING — Only 60 welded steel "Trouble Saver" Shoring frames are required to support forms for 30'-wide bridge in New Jersey. They are spaced 3'7" apart, with 3'8" between rows, to support slab varying from 1'5" to 2'3".

ONCE USED mainly for buildings, steel scaffolding is now a time and money saver for structures required in highway work.

The most important use is "Trouble Saver" Sectional Steel Shoring to support forms for concrete overpasses and bridge piers. This modern Shoring Method reduces over-all forming costs substantially . . . and here's how—

"Trouble Saver" Shoring is rapidly erected from simple parts—frames, U-heads and patented SlideLoks for joining frames and braces. Since it has a known load-bearing factor, the spacing between frames and rows of frames can be accurately calculated to provide shoring with proper capacity for load requirements. Double-diagonal bracing "automatically" plumbs the free-standing sections.

20" extension legs are adjustable to reach exact heights and eliminate cutting, fitting and wedging with wood. Form stripping is fast—simply lower legs and work atop planking laid across frames. Minimum nailing speeds dismantling, adds life to forming lumber.

Other PS Co. scaffolding also helps gain time and cut costs on highway jobs. For more information, send coupon below.



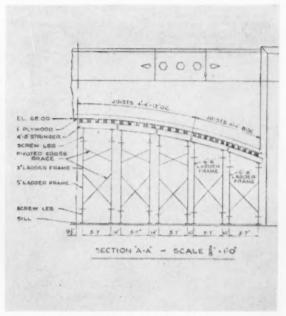
SAVES WALK-AROUND—
41-high "TubeLox"® Scaffolding access tower with built-in stairways quickly gets men to daily job-sites; saves long walks from bridge ends. New Jersey Turnpike bridge; Bethlehem Steel Co., builders.

SEND NOW-For Highway Bulletin G208 Full details on cost-cutting ways to use steel shoring and scaffolding on road jobs.

The Patent Scaffolding 38-21 12th Street, Dept.	g Co., Inc. M&E, Long Island City 1, N. Y.
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SIMPLE BRIDGE SHORING — Light-weight, easily-erected, prefab sections of "Trouble Saver" Steel Shoring eliminate heavy timbers (and cranes to handle them) for contractor, Matthew J. Reiser, Inc., on this job. 146 2'-wide ladder frames, 105 5'-wide frames and 196 14" U-heads provide ample support with minimum equipment for overpass on an exit road from the Wilbur Cross Parkway, Wethersfield, Conn.



PS Co. ENGINEERED LAYOUTS—Complete, accurate shoring layouts are a regular part of PS Co's engineering service available thru nation-wide offices or representatives that sell or rent "Gold Medal" Scaffolds. See classified 'phone directory for your local source. Included are recommendations for joists, stringers, and every component to provide the safest, most efficient and economical shoring.

Does Many Highway Jobs



DUAL PURPOSE—Here, "Trouble Saver" Scaffolding speeds erection of formwork for above-ground pier shells and supports platform for vibrating machines and workers on a New York State Thruway overpass.



CUTS SHORING COSTS 25%—Mel-Bros Co., contractor on this street relocation bridge in Scotch Plains, N. J., formerly used only wood shoring methods. On this project "Trouble Saver" Steel Shoring was used. 272 frames, quickly assembled in 3' by 5' towers and in rows spaced 2'6" apart, provide faster, easier shoring for the job. The contractor reports savings of 25%.

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BRACING WALLS—Foreman plumbs wall while workman adjusts supporting brace. Braces used are Richmond's adjustable end braces.



FILL-IN FORMING-A 3-ft space left between floor slabs is formed in and concreted, completing work on an entire floor.

Interior partitions first are erected. Outside walls follow until panels on the long casting bed are used up. The crane then is moved to the smaller beds, and wall erection is completed. Each panel is bolted to its neighbor at the top with steel straps. Vertical joints of all upright panels are sealed with a Neoprene sealing compound that is gunned into place.

Work then begins on placing of floor slabs. Tops of all wall panels first are provided with rubber bumpers on about 2-ft centers. These absorb the shock of the floor slab when it is being lowered into place. Between bumpers, wall tops are slushed with grout to provide a bond between wall and floor slab. Each floor slab then is lifted and lowered into place by the crane, whose spreader bar is attached to four lifting lugs cast into the top of the slab.

Just before the slab comes to rest, workmen hop onto its top-side and shimmy it into exact location with pinch bars. A signal to the crane operator lowers the slab into place. The spreader bar then is released.

The contractor works each building alternately so that casting goes on continuously during erection. For second and third floors, as well as for the roof, casting and placing of panels is the same.

What About Costs?

Wall panels with two smooth faces are being cast and erected at 70¢ psf. Floor slabs, also with two smooth faces, are being cast and placed at \$1.60 psf. Were it not for the two smooth faces, costs would be lower still.

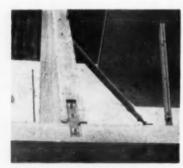
Costs for this type construction is about 70¢ per cu ft as compared to more than \$2.00 per cu ft for poured-in-place concrete construction.

Tom Barnes runs the job for Ross, A. J. Currie is superintendent for I&L. J. W. Silliman, Captain, USN Civil Engineer Corps., is resident officer in charge of construction.

These Items Speed Precast Job



SHELTER-Visqueen-topped shelter will be carried over casting bods in rain.



BRACING WALLS—Steel braces connect wall panels to wall panels at all top points.



ELECTRICAL TERMINALS—Conduit cast into panels have predesigned terminals.

ENGINEER'S FIELD REPORT

PRODUCT

RPM TRACTOR ROLLER LUBRICANT

FIRM

THOS. SCALZO CO. Seattle, Washington

Just 3 new track rollers in 4 years' tough service



Granite Boulders put a real strain on track rollers, but this Allis-Chalmers HD20, using RPM Tractor Roller Lubricant, A/C Type, has replaced only three rollers in four years of working under such punishing conditions. Tractor is operated by Thos. Scalzo

Co., specialists in earth-moving projects. RPM Tractor Roller Lubricant gives this operator an average life of 3,000 hours for track rollers on equipment in heavy-duty service. After 3,000 hours, rollers are switched to equipment in lighter duty service.



Pulling a Grid Roller, this Caterpillar D8 tractor is another of Scalzo Co.'s 14-tractor fleet—all of which use RPM Tractor Roller Lubricant. Says Vic Scalzo, "In spite of rough service under all kinds of conditions, in 15 years we have never had to replace a

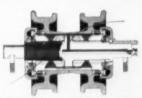
track roller because of lubricant failure. Our onthe-job experience and our service records prove that RPM Tractor Roller Lubricant has been doing a good job for us since we started using it in 1941."



PRADERABE "BPR" AND DESIGN

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How RPM Tractor Roller Lubricants resist wear in toughest service



- Flow evenly to all bearing surfaces—retard rusting.
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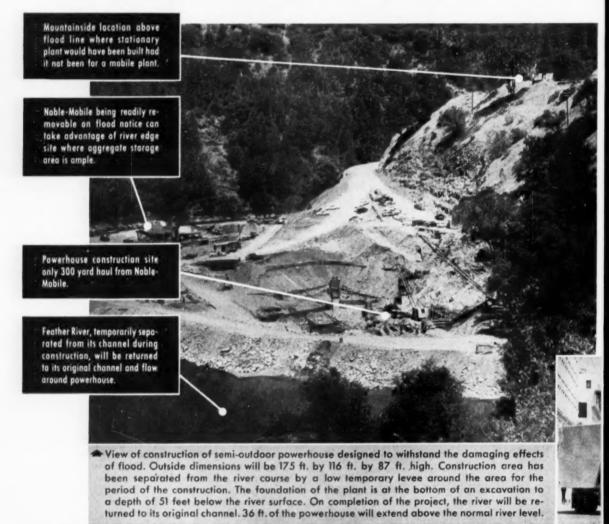
How NOBLE-MOBILE solved flood

Flash floods that could wash away a fixed batching plant installation were a threat at the site of the powerhouse construction by the Bechtel Corporation for Pacific Gas & Electric Company on the Feather River, California. A gravel bar at the river edge was the logical site for a concrete batching plant because it was the only place with sufficient area for aggregate storage. Yet, with flood danger, the only practical alternative site was a point 110 ft. up the canyon wall off the Western Pacific Railroad right-of-way. A stationary plant there would have required extensive concrete foundations and a major earthmoving job to level an area of sufficient size to store aggregates. The site also would have entailed transit truck hauls under all weather conditions down a steep grade.

Noble-Mobile made the mountainside installation unnecessary. This batching plant on wheels was put into operation at the river edge as it could be hauled out to high ground on only a day's notice of flood. The mobility permitted scheduling work for 12 months a year so that the job could be completed by 1958. Noble-Mobile saved 70% in installation costs as against a stationary, mountainside plant. On this project, Noble-Mobile normally has to operate only 50% of the working day in order to provide the 25,000 yards of concrete that ultimately will be used. The batch is hauled by transit trucks to the construction site only 300 yards distant.

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NOBLE-MOBILE BATCHING PLANT

supplies concrete to transit trucks. May also be used for dry batch or pre-mix. Has bulk cement storage silo with truck hopper unloading screw and elevator. Weighs aggregates and cement separately and simultaneously. Automatic or semi-automatic control. No field wiring or concrete foundations required on base plant.

Noble-Mobile is driven to the job site and goes into production promptly. Purchase is easier to finance than stationary plant.



▶ 1,000 yards of 2 ½ ", 1 ½ ", ¾ " aggregates and sand, hauled by truck from Oroville 25.1 miles away, are stored in compartmented piles at the site. They are fed by a scooploader to a conveyor leading to the plant. The materials are automatically batched and discharged by a conveyor to the transit trucks for the approximate 2-minute haul to the pouring site.

DISTRIBUTORS: BIRMINGHAM, ALA., Equipment Service Co., Inc. • LOS ANGELES, CALIF., Smith-Booth-Usher Co. • DENVER, COLO., Western Machinery Co. • MIAMI, FLA., Neff Machinery, Inc. • CHICAGO, IlL., Arrow Contractors Equipment Co. • INDIANAPOLIS, IND., Manwaring Machinery Co., Inc. • CEDAR RAPIDS, IOWA, James W. Bell Co., Inc. LOUISVILLE, KY., Emmetr C. Worson Co. • BALTIMORE, MD., General Supply & Equipment Co. • BOSTON, MASS., Hedge & Mortheis Co. • DETROIT, MICH., R. G. Moeller Co. ST., PAUL, MINN., Borchert-Ingersoll, Inc. • KANSAS CITY, MO., Funkhouser Machinery Co. • ST. LOUIS., MO., George F. Smith Co. • DURELLEN, N. J., Miller Equipment Co., CHARLOTTE, N. C., Sporton Equipment Co. • CIEVELAND, OHIO, Wepco Equipment Co. • CKLAHOMA CITY, OXLA., Herd Equipment Co. • PORTIAND, ORE., Clyde Equipment Co. • PILLAS Equipment PA., Furnival Machinery Co. • PILTSBURGH, PA., Equipment Supplies, Inc. • NASHYLILE, TENN., Peterson Machinery Co. DALLAS, TEX., North Texas Equipment & Supply Co. • EL PASO, TEX., Border Machinery Co., Inc. • SAN ANTONIO, TEX., Contractors Machinery Co. • WACO, TEX., Richards Equipment Co., Inc. • SANT LANCOLVER, B. C., Wastcast Equipment Co., Lid. • WINNIPEG, MAN., Huggard Equipment Co., Lid., TORONIO, ONT., Ontario Equipment & Supply, Ltd. • MONTREAL, QUE., Laurentide Equipment Co., Ltd.



Boom-mounted drills and wagon drills, equipped with 1 1/4-in. round Bethlehem Hollow Drill Steel, bite into rock at site of Bear Creek Dam, on Lehigh River in northeastern Pennsylvania. Supervising Authority: U. S. Army Corps of Engineers. Prime Contractor: Gasparini Excavating Co., Inc., Peckville, Pa. Drill Steel Reconditioner: Howells Mining Drill Company, Plymouth, Pa.

New Flood Control Project For Lehigh Valley

Shown here is part of the rock removal for the first phase of Bear Creek Dam and Reservoir, a huge flood control project under construction on the Lehigh River at its confluence with Bear Creek, near White Haven, Pa. The blast holes for the 125,000 cu yd of rock and earth excavation were made with Bethlehem Hollow Drill Steel.

The earthfill dam and reservoir, plans for which were accelerated by hurricane and flood damage in 1955, is being constructed under the supervision of the U. S. Army Corps of Engineers, Philadelphia District. It is designed to provide flood protection for Allentown and Bethlehem, as well as other communities along a 75-mile stretch of the river. Upon completion, the dam will be 234 ft high, and 3000 ft long. The reservoir will accommodate the water

runoff from 288 sq mi of drainage area, and will have a capacity of 108,000 acre-feet.

Bethlehem Hollow Drill Steel is ideal for any type of rock removal because it is rolled from fatigue-resistant steel. Its hole is uniform, and centrally located. It has a wide quenching range. It is easy to heat-treat for the proper balance of toughness and wear-resistance, making possible long-wearing threads and strong shanks.

Bethlehem Hollow comes in Carbon and Ultra-Alloy grades in rounds, hexagons and quarteroctagons, in lengths of from 18 ft to 27 ft. Longer lengths can also be furnished.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM HOLLOW DRILL STEEL CARBON AND ULTRA-ALLOY





BEAR IN THE BORROW PIT

THIS D9 LOADS SCRAPERS WITH 25 HEAPED YARDS **IN 45 SECONDS**



ent, knows from production charts that the D9 pusher loads more yards faster, at lower cost.

Working on a highway relocation job near Eau Claire, Wis., L. G. Arnold, Inc., cut cycle times and boosted yardage with a Caterpillar D9 Tractor push-loading a CAT* DW21 and No. 470 Lowbowl Scraper.

On a round-trip haul of 3 miles they averaged 100 cu. yd. per hour - 4 heaped loads of 25 cu. yd. each. Loading time in the borrow pit, with the mighty D9 pushing, was an average of only 45 seconds.

Phil Dudenhoefer, grade superintendent for L. G. Arnold, Inc., says: "I've got both feet right in the dirt, where I record output and performance of every machine. With the D9 as pusher, the DW21-No. 470 unit is outproducing by far any other equipment on the job."

That experience has been shared by hundreds of firms, as more and more D9 Tractors have gone to work all over the country. For fast loading you simply can't beat the D9, with its 320 HP at the flywheel and maximum drawbar pull of 98,000 pounds, Power-boosted controls and excellent visibility make this giant one of the easiest of all tractors to operate. Available either with torque converter or direct drive with oil clutch. Maintenance is easy, too. And it's ruggedly built to lick the world's toughest jobs.

Your Caterpillar Dealer can show you actual performance records of bigger production at lower cost per yard. He'll give you a demonstration right on the job. And he stands behind the long life of every machine with reliable service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR'

HEAVY-DUTY EARTHMOVERS FOR THE HARD WORK



503 TRUCK LOADS IN ONE DAY - Here's an example of real money-making operation! A Minnesota contractor reports his LS-98 shovel with 11/4-yard dipper loaded out 503 five-yard trucks in eleven

hours. That's real production. Owner and operator give credit to Speed-o-Matic controls, hydraulic-power steering and bonus horse-power that brings up a full dipper every pass.

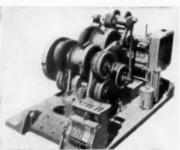
Increasing cycles per shift

Standard on every Link-Belt Speeder, Speed-o-Matic power hydraulic controls minimize operator fatigue. Response is fast, positive, precise

Exclusive with a Link-Belt Speeder, this true power hydraulic control system allows the operator to put his machine through its paces at the flick of the wrist. He's not subject to costly end-of-the-shift letdown . . . stays fresh, pushes his machine to its high limit throughout the shift.

Hydraulic-actuated clutches are self-compensating for heat and normal lining wear. Kick the engine over and go to work. There are no frequent stops for clutch adjustments.

It's advantages like these that put Link-Belt Speeder years ahead of the field - in productivity, in low maintenance and service costs. Start having your equipment dollars earning bigger returns. See your Link-Belt Speeder distributor now. Or write: Link-Belt Speeder Corporation, Cedar Rapids, Iowa.



MORE USABLE HORSEPOWER than other TRUE POWER HYDRAULIC machines using the same make and model engine. Yet a Link-Belt Speeder remains well within the engine manufacturers' recommended operating speeds. It's possible because a Link-Belt Speeder is an extrastrength machine, designed and built to take full advantage of an engine's available power. This extra strength is evident in the size and quality of shafts, gears, clutches and structural members.



CONTROLS—A Link-Belt Speed-er exclusive, Speed-o-Matic power hydraulic controls, transmit pres-sure through oil directly to the clutches . . . eliminate over 150 wearing mechanical parts. Clutches engage smoothly, positively—with-out jerk, jump or lag. Oil is main-tained at proper pressure by an engine-driven hydraulic pump.

It's time to compare . . . with

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls



EVERY SHIFT, cablecar hauls crew from loading platform to diversion tunnel site at bottom of canyon. Dam will span gorge 1,000 ft upstream from cable crossing.



STEEL RIBS for tunnel bracing move to job site, 680 ft below.

Glen Canyon Cableway Gets Big Job Started

RIDING AN AERIAL CABLE-CAR 680 ft down a sheer-walled canyon is an unusual way to get to work. But that's how they do it at the Glen Canyon dam project on the Colorado River.

Mountain States Construction Co. of Denver, who built the cableway, didn't have much choice. To drill the 2,800-ft west diversion tunnel for the dam, they had to get men and equipment to the bottom of the gorge, and the walls were too steep for a road.

Glen Canyon is where the Bureau of Reclamation is building the U.S's second highest dam. Located 80 mi from the nearest settlement (Kanab, Utah) and 135 mi from the nearest railhead (Flagstaff, Ariz.) it is an ideal site for a dam but a tough place to work.

The west diversion tunnel, which Mountain States is building for \$2.5 million, is the only part of the dam not included in Merritt-Chapman & Scott's record-breaking \$107 million contract. Work on the tunnel has been going on since last October and should be finished this year.

Mountain States' cableway is an impressive affair. Its 2½-in. main cable spans the 1,300-ft canyon, and it can ferry 25 tons of material across or lower it to the river 680 ft below.

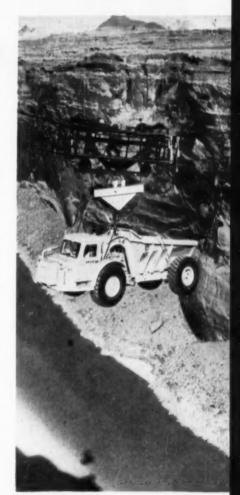
This is the only practical way to reach the tunnel portal at river level. All equipment, including 17-ton Euclid trucks and 16-ton tractors, reached the site by cableway. Each shift, a two- to nine-man crew, is hauled in and out in a special car.

The alternative to the cableway is a difficult 25-mi jeep road down a tributary canyon and along the river bank. But the aerial route is faster and safer.

The lift can travel at 65 fpm horizontally and 57 fpm vertically, and it has a capacity of 25 tons or 15 men. The hoist is a three-drum converted steam rig, now air-controlled and powered by a Cummins six-cylinder diesel engine.

Drilling

Crews drill the full face of the 44-ft diameter tunnel, using a massive 31x40 ft, four-level jum-



CABLEWAY handles all equipment including 17-ton Euclid trucks.



GIANT JUMBO permits full face drilling of 44-ft dia tunnel. Here, drilling is complete. When dynamite is placed, jumbo will be rolled back before charge is fired.

GLEN CANYON ...

bo. Mountain States designed the jumbo, and Alladin Iron and Steel Corp. of Denver built it.

Two air tuggers lift the lower floors to clear a 16x16 ft opening for trucks. The entire structure is on wheels so a single tractor can move it easily.

The jumbo mounts 18 Cleveland 3-in. jackleg drills that use Cleveland throwaway bits. Each round, the crew drills about 158 holes to a maximum depth of 16 ft. The drilling operation takes 3 hr.

Each round requires 1,100 lb of explosive. Mountain States uses Ajax Gold Medal 40% dynamite. The charge is fired in eight delays to give an average advance of 14 ft per round.

Air comes from two sources. For the drills, two Gardner-Denver 900-cfm compressors push air through a 6-in. pipe to the jumbo. For ventilation, a 48-in. Joy fan supplies 70,000 cfm through 42-in. ducts. All trucks have their own exhaust scrubbing equipment.

For lighting, in addition to the usual tunnel lights, Mountain States has equipped the jumbo with floodlights. Power for these and other electrical equipment comes from a Caterpillar 75-kva generator.



JACKLEG DRILLS punch 158 16-ft holes in 3 hr for each round.

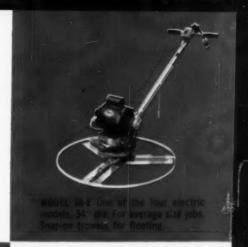


AFTER BLAST, three Euclid 10-yd trucks and Allis-Chalmers 2-yd front loader remove rock. Jumbo floor lifts to allow trucks through. Mucking one round is a 7-hr job.





MODEL JA-G Medium machine for general use. 34" dia. Float trowels snap on. Largest selling model. Gas.





MODEL JA-4G For average jobs, Four trowel design. 34" dia. Combination trowels. Fixed ring. Gas. (JA-4E, Elec.)





MODEL BA-G For finishing large areas. 44" dia. Snap-on trowels for floating. Gas. (BA-E, Electric.)



No matter how much or how little concrete finishing you do, there's a Whiteman Finisher that's perfect for your needs. Each of the 13 models incorporate exclusive Whiteman features and rugged construction, the results of 18 years of sound engineering and quality manufacturing. And each is designed to do the job faster, better and cheaper—to save time and money—to increase profits for you. Call your Whiteman distributor for details today!

More Whiteman Finishers are in use than <u>all</u> other makes combined!





MODEL TW Twin, for extra-large areas. Finishes 5' width. Does work of two machines. No torque. Comb. trowels.





The Big Fleets buy than any other make!

New Heavy Duty trucks offer you a choice of four modern Short Stroke V-8 engines—178 to 212 horsepower.



Why?...because on-the-job performance and low operating costs prove FORD trucks cost less! Take a tip from the men who buy trucks every year. Official truck registration data for the past two years shows that owners of America's biggest commercial truck fleets have bought more Ford trucks than any other make!

Contractors and suppliers engaged in heavy construction work have found Ford trucks are best for their fleets. To begin with, Ford's initial costs are low. Many models are priced below all competitive makes.

FORD TRUCKS COST LESS

more FORD TRUCKS



Ford's Tilt/Cab Models are big in power, in capacity ... up to 212 hp. Six series provide GVW's from 18,000 lb. to 30,000 lb., GCW's to 60,000 lb.

For example, the new Ford Tilt/Cab models are America's lowest-priced!*

And it costs less to run a Ford truck! Thanks to modern Short Stroke power and sturdy chassis construction, operating costs and "shop time" are reduced. Another important Ford plus is longer truck life—a fact certified by independent insurance experts.

Add it all up—you'll find Ford trucks do cost less! Contact your Ford Dealer...let him show you why the big fleets are buying more Ford trucks than any other make.

*Based on comparison of manufacturers' suggested retail prices

Here's what 1957 Ford truck users have to say . . .



"I've used Fords ever since 1935. I like Ford trucks because of the punishment they'll take. In my estimation, Fords are cheaper to operate," reports P. A. "Pete" Goldring, owner.



"We've been using Ford trucks for more than 10 years. They have been called on repeatedly for 'out-of-their-class' performance and have stood up very well," says Walter C. Petersen, supt. of equipment.

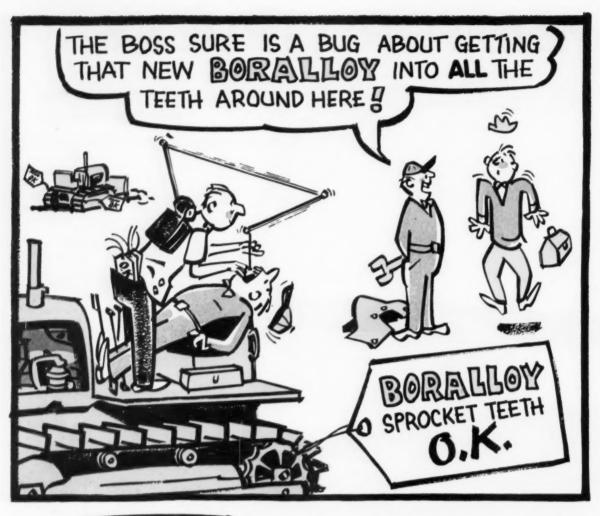


"In comparison with other makes we've used, this Ford is as good a handling truck as you can buy, Our Fords are long-life trucks and they give us real service," says T. W. Glassock, partner.

LESS TO OWN

LESS TO RUN

LAST LONGER, TOO!







It increases sprocket life 50 to 100%! Got the name?— Boralloy. It's a new alloy which Caterpillar uses to make sprockets and replacement rims. It permits a minimum of 61% deeper hardening.

Result: CAT° BORALLOY sprocket teeth hold their contour longer. Teeth and track bushings stay in proper mesh, reducing wear and tear on all track running gear. Don't take chances. Get parts you can trust—see your Caterpillar Dealer today! Where else can you get the long-life benefits of Boralloy?

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*



Mucking

On a tunnel this size, a shovel often is used to load the broken rock. Since all equipment had to be lowered by cableway. Mountain States decided to use an Allis-Chalmers HD-11 tractor with front loader to load the trucks.

Three 10-vd Euclid trucks carry the rock out the portal and dump it. In an average round this truck and loader combination can move 750 yd in 7 hr.

So far, ribbing has been required only at the portal. This consists of 6x6-in. timber lagging supported at 3-ft intervals by 10WF29 ribs.

In the interior of the tunnel, rock bolts are sufficient to hold the crown. These bolts are 6 to 8 ft long and contain a 34-in. wedge inserted in a slot at the end of the bolt. To place the bolt, a hole is drilled in the wall to the proper depth. An air hammer drives the bolt home, and the wedge expands to tighten it. The nut is tightened by an air impact wrench

The tunnel will be lined with concrete to a finished inside diameter of 41 ft. This is not part of the Mountain States contract; it will be done next year by Merritt-Chapman & Scott.

Big Dam

Glen Canyon will be the country's second highest dam. Its 700ft height will be topped only by the 726-ft Hoover Dam. It will use 4,770,000 cu yds of concrete, exceeded only by Grand Coulee's 10,580,000 and Shasta's 6,530,000.

The dam is a major part of the Bureau of Reclamation's Colorado River Storage Project. It will cost nearly \$400 million.

In addition to the dam, the overall project includes a completely new community of 10,000 people, a 96-mi highway connection, and a permanent bridge across the canyon. These are major jobs in themselves.

The bridge, a 1,028-ft clear span steel arch, will be the highest and second longest of its kind in the United States. Kiewit-Judson Pacific-Murphy of Emeryville, Calif., has the \$4.2 million contract to build it.

Ernest R. Moore is supervising the tunnel work for Mountain States. Resident chief inspector for the USBR is W. C. Donahue.

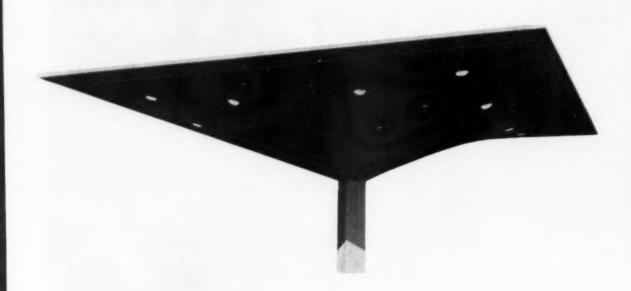


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because UNIT's advanced design gives you Self-Aligning, Replaceable Hook Shoes . . . Straight-in-line Engine Mounting with Torque Converter . . . Hydraulic Actuated Clutches . . . Modern Transmission with Involute Splines . . . One Piece Cast Gear Case . . . Alloy Steels and Forgings . . . Force Feed Lubrication and many other UNIT advantages. These life-prolonging features are contributing substantially to the performance and efficiency of each machine. And they explain why UNIT equipment is so universally acceptable.

> See the many other new features illustrated and described in UNIT CHALLENGER Bulletin C-800. Write for your copy of this bulletin.





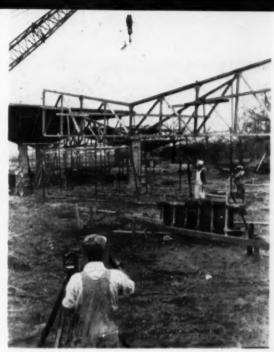
Concrete Umbrella Roofs



PIER FORMING—Workmen place pier forms for column 8 ft high and 18 in. sq that will support hyperbolic paraboloid concrete roof for club restaurant in Dallas, Tex.



PRIMARY TRUSSES—First aluminum trusses that will support forms are bolted to steel collar placed around top of column.



SECONDARY TRUSSES—Crane positions intermediate trusses.

Those will be joined to perimeter trusses to help support forms.

Test Builder's Ingenuity

ALUMINUM TRUSSES used as horizontal form supports are a Dallas, Tex., builder's answer to the tough job of forming for thin-shelled concrete hyperbolic paraboloid roof slabs.

A hyperbolic paraboloid roughly resembles an inverted umbrella set on a post. It is attractive in appearance, and its cost is about 15% less than a comparable prestressed concrete slab. It can be built for approximately \$1 psf.

They're Inexpensive

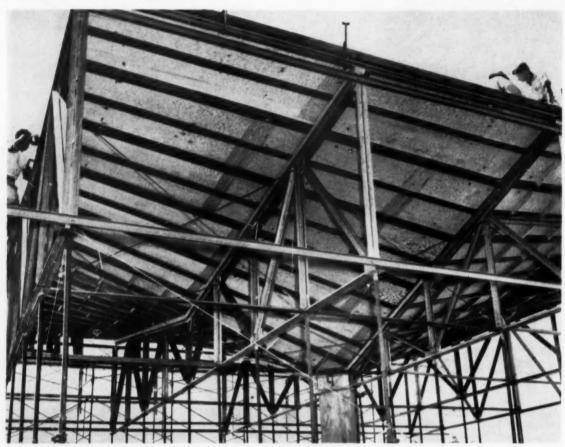
What makes hyperbolic paraboloids economical? The answer lies in the use of complex curved surfaces that spread stresses over a large area rather than concentrating them at a few points as in post and beam construction. This permits the use of very thin concrete shells.

Despite the complex curves, straight lines can be laid along its surface, and there is no need for curved or bent lumber for forms. But forming for hyperbolic paraboloid shells still is tricky.

When Great Southwest Corp., a Dallas industrial development firm, decided on hyperbolic paraboloid design for a club restaurant in Dallas, it didn't anticipate



PANELS—Workmen lift lightweight form panels over aluminum framework of trusses. Panels are made up of sheets of 3/6-in, plywood inserted into grooved aluminum frames.



FORM ASSEMBLY—Acrow adjustable shores set over mud sills on the ground support structural framework. Forms go over these.

Form frames fit on studs welded to top truss chords to provide slight warp to form surface. C-clamps hold forms secure.



BRACING—All trusses are cross-braced by turnbuckles and by lightweight framing.

much trouble in construction. The club, which forms part of an industrial park development in the area, consists of nine 40x40-ft connected shells 3 in. thick, each balanced on a concrete column 8 ft high and 18 in. sq. But trouble came from GS when it advertised for concrete subcontractor bids.

Too Tough To Build

Concrete contractors in the area took one long look at the blueprints and decided that the odd-shaped slabs would be tough to build They wanted no part of the job unless they got it on a cost-plus basis. This GS wouldn't accept, so they decided to do the job themselves.

With the help of Felix Candella of Mexico, noted designer of hyperbolic paraboloid structures as consultant, GS came up with a forming technique making use of aluminum trusses as form supports and retained A. A. and E. B. Jones Construction Co. of Denver. Colorado, to build the first forms.

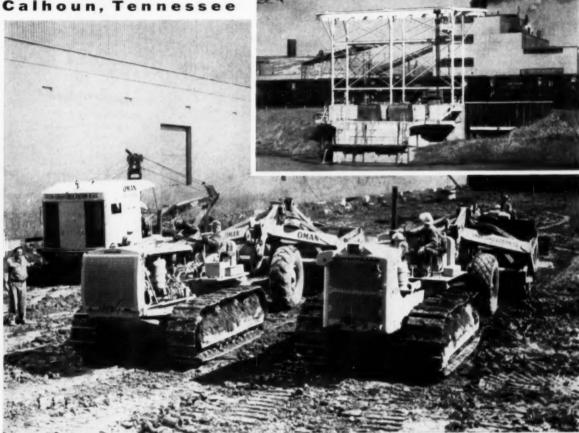
Before slab forming begins, concrete columns are poured over drilled concrete caissons. Each column—with a drainage pipe through its center—is poured to shell height of 8 ft.

A specially designed steel collar that serves as a truss anchor is slipped around the top of the column. Two aluminum trusses 20 ft long are bolted to the collar at 180-deg angles to one another. Acrow adjustable shores set over mud sills support truss lower chords and keep them at a uniform 8-ft height. Since each shell rakes upward 7 ft from column to edge, these primary trusses are built with this same rake.

Two intermediate trusses 40 ft long add additional support. Each is placed at a halfway point between column and shell edge. These are placed parallel to the aluminum primary trusses and to each other.

continued on page 92

Bowaters Southern Paper Corporation Plant, Calhoun, Tennessee



Smooth-purring "Cats"! These super-charged D-8 "Cats" - shown at work on an expansion project at the Bowaters newsprint mill job - have clean, smooth-running engines - thanks to Estor D-3.

Oman Construction Company, Inc., Nashville, Tenn.

gets outstanding engine cleanliness, top over-all performance with **ESTOR D-3**°

Oman Construction Company believes in using the newest and finest in modern construction equipment. And they know that, for top operating performance and economy, this equipment demands the newest and finest in lubricants. After thorough investigation, Oman engineers chose Estor D-3 for all late model, supercharged Caterpillar diesels.

They report minimum engine deposits and maximum engine performance — resulting in long periods between overhauls and very low over-all operating costs.

More and more contractors are finding that in any equipment, on any job, under any operating conditions...it pays to specify ESSO.

For better results ...



PETROLEUM PRODUCTS

Esso products and services are available through Esso Standard Oil Company plants and offices in more than 400 cities and towns throughout New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, the Carolinas, Tennessee, Arkansas, Louisiana and the District of Columbia.



"Factory approved" diesel fuel injection service... available everywhere

Prompt, efficient, and reliable service by American Bosch Authorized Fuel Injection Service Stations. Here, factory-trained experts are equipped with special tools and test equipment to give you fast, accurate

repair work using genuine American Bosch replacement parts. Use your nearest American Bosch Service Station. It's a service that will save you time and money . . . and keep your diesels on the go.

Here's a complete list of Authorized American Bosch Fuel Injection Service Stations-the largest network of sales and service agencies in the industry. Tear it out and keep it for a handy reference.

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Standard Motor Parts CINCINNATI Tri-State Distributing Corp. CLEVELAND, 8 The Cleveland Ignition Co. COLUMBUS, 15 Columbus Ignition Co. Dulina Diesel Fuel Injection Equip-ment Sales & Service Co. DAYTON, 4 Lisbon Diesel & Supply Co., Inc.

OKLAHOMA ENID Dinsmore-Cowie Company OKLAHOMA CITY. American Electric-Ignition Co. Auto Electric Company PONCA CITY TULSA Magneto Ignition Company

DREGON Specialized Service Co. Haupert Diesel Service KLAMATH FALLS MEDFORD PENDLETON PORTLAND, 14 Eds Magneto & Diesel Co. Automotive Products, Inc. ROSEBURG Diesel Injection Service

PENNSYLVANIA Aden L. Hawbaker Penn Diesel Service Co. CHAMBERSBURG HARRISBURG HAZLETON MT. CARMEL Penn Diesel Service Co. Gengler's Diesel Service & Sales PHILADELPHIA North American Diesel Injection PHILADELPHIA

Sullivan Brothers PHILLIPSBURG Keystone Diesel Injection Service Automotive Ignition Co., Inc. PITTSBURGH, 6

CHARLESTON COLUMBIA

SOUTH CAROLINA Diesel Fuel Injection Service Boney Diesel Works Co., Inc.

SOUTH DAKOTA LEMMON Josund Auto Electric RAPID CITY SIOUX FALLS Hoseth Auto Electric Dakota Diesel Service Co. TENNESSEE

KNOXVILLE, 15 Diesel-Magneto Service Co. Automotive Elec. Service Co Precision Parts Corp. MEMPHIS, NASHVILLE Service Co.

Diesel Engine & Pump Co. Magneto & Diesel Injector Service Beard & Stone Electric Co., Inc. Reynolds Batt. & Mag. Co. BEAUMONT CORPUS CHRISTI DALLAS, 1 EL PASO HOUSTON 1 Beard & Stone Electric Co., Inc. Diesel Pump & Injector Service HOUSTON Magneto & Diesel Injector Service ODESSA PAMPA Electric Service & Supply Radcliff Bros. Electric Co. SAN ANTONIO SAN ANTONIO S. X. Callahan Womack Bros.

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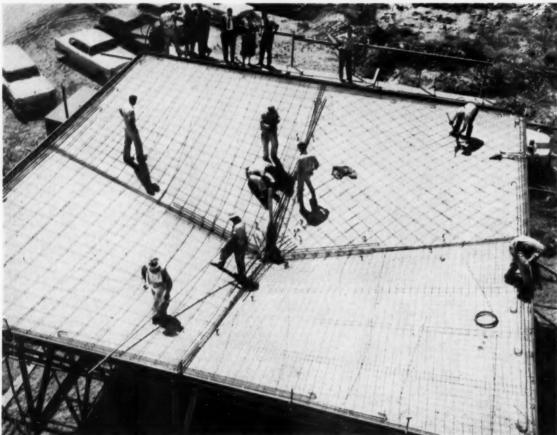
AMERICAN BOSCH DIVISION

MERICAN BOSCH ARMA

CORPORATION SPRINGFIELD 7, MASS SUDBURY TORONTO

TORONTO

TORONTO



REINFORCING—Surprisingly little reinforcing steel is needed for slab which will average 3 in. in thickness. Only 2,500 lb

of steel, or 1.6 lb psf, is required for a total of 24 yd of 3,000-psi concrete per shell. Four compression ribs complete reinforcing.



POURING—Concrete is poured by crane and bucket. Surface then is troweled.

The truss upper chord at its center point stands 3 ft 6 in. above the bottom chord. They then rake upwards on each side to 7 ft above column height.

Four rectangular trusses 40 ft long and 7 ft high form the perimeter of the shell. All trusses are cross braced by turnbuckles and lightweight framing.

Forms consist of %-in. plywood panels 40 in. wide and 10 ft long that are set into flexible aluminum frames and placed over the truss supports. Panel ends are slotted to fit into the frame. Holes in frames fit over vertical studs along the top truss chord. C-clamps help hold panels in a slightly warped position.

Prior to pouring, reinforcing for four compression ribs is placed on the form. Compression ribs measure 3 ft wide at the column point and narrow to zero width towards the edge of the shell. Reinforcing for each shell is light. Only 2,500 lb of steel, or 1.6 lb psf, is required for a total of 24 yd of 3,000-psi lightweight concrete used. Concrete, poured by crane and bucket, is 1-ft thick for a 3-ft area around the column. Ribs vary from 1 ft to 3 in. thick. The rest of the shell is 3 in.

Careful hand troweling completes the job. Forms for each shell are stripped after 48 hr.

"We're working on a method," said Clarke, "where forms will be divided into quarters and set on casters so that they can be moved from shell to shell without dismantling component parts. These should make forming even faster."

Great Southwest is a joint venture of financial and real estate interests that include Amon Carter, Jr., in Dallas, Webb & Knapp, Inc., Rockefeller Center, Inc., Carl M. Loeb, and Rhoades & Co., in New York.

NOW...BANTAM offers 8-TON crane capacity! and...gives you greater stability where you really need it!



With or without outriggers you handle more at 15'-20' and even beyond!

HERE IS THE NEW 8-TON BANTAM with its specially engineered Model 300 crane carrier mounting—offering you increased crane capacity, with or without outriggers, at normal working radii (15'-20'-25') to handle your crane jobs faster, at lower cost.

BANTAM's job-matched performance between carrier and basic machine gives you more lifting capacity per pound of weight than any other rig in its size class on the market today! BANTAM engineering know-how, based on more than 8000 machines in the field, is your assurance of a rig to handle your heaviest work without sacrificing mobility and maneuverability because of excessive "dead" weight. Here is real heavy-duty performance for all your steel erection, concrete pouring and materials handling jobs that call for maximum lifts with maximum stability.

You move faster, work better, for less cost with a BANTAM!

HEAVY-DUTY, BANTAM-BUILT 300 CARRIER MAKES THE DIFFERENCE!

The 300 crane carrier is engineered and built especially for the new 8-ton BANTAM basic unit. Job-matched for maximum performance, it offers stability where it counts!

Point by point and job by job, the 300 is superior—in performance, in quality, in durability.

ONLY BANTAM in its size class builds its own complete crane carrier line . . . job-matched to outperform ALL others!

BEFORE YOU BUY ANY CRANE - SEE THE NEW 8-TON BANTAM AND 300 CARRIER!

CM-145

Built by the world's largest producer of truck cranes and excavators.

Quick facts about the new 8-ton BANTAM

BANTAM T-35 mounted on Model 300 carrier *
16,000-lb lifting capacity * Open-thioat, heavyduty welded boom * 8-part boom hoist line
part hoist line * 1250-lb additional counterweight
* Heavy "A" frame pipe and broces * High gantry
. . telescoping boom stops * Double hook rollers
and flame hardened trunnion rollers * Boom hoist for
both power up and power controlled lowering * Precision control for fast, safe load-spotting * Available with remote control





... with construction's best-proved torque converter tractors
... backed by 17 years of on-the-job experience
... thousands of profit-tested production models







More efficient dozing—Matched engine-converter-transmission team lets operator choose speed range for each job as he starts... finish most jobs without further clutching or shifting (except for reverse). With full control at throttle, he can work safely and efficiently regardless of terrain.

Faster on tough scraper jobs—These Allis-Chalmers tractors multiply torque up to four and a half times... develop maximum drawbar pull when it's needed most... start the load smoothly regardless of material in the cut... automatically accelerate to the highest speed that conditions permit.

Nothing like 'em on big loading jobs—The 3-yard HD-16G and 4-yard HD-21G tractor shovels are tough, mobile, flexible enough to pay big dividends on many projects. Operators can crowd surely and steadily... without stalling, shifting gears or losing control of the bucket because of slow engine speeds.



per man-hour...at lower cost

 $N_{
m o}$ construction equipment dealer in your area knows

torque converter tractors as well as your Allis-Chalmers dealer. See him... and get the benefits of 17 years' experience working for you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



Longer life for big equipment—Hydraulic torque converter cushioning reduces shock and vibration on the power train, the entire tractor and its auxiliary equipment—mounted or drawn. That means less downtime, more production time . . . better profit protection on any job!

ALLIS-CHALMERS

Engineering in Action

Sled-Like Shield Holds Banks

STANDOUT PERFORMER on a South Bend, Ind., sewer job is a sled-like trench shield that eliminates the need for sheeting on deep trenches.

Developed by Niles Excavating Co. of Terre Haute, the shield is speeding the laying of some 1,900 ft of 30-in. sewer pipe in trenches 11 ft deep for a housing development. With the shield, Niles is placing between 200 to 340 ft of pipe per day.

Backhoe Pulls Shield

The shield is 22 ft long. It has a steel plate head for the front end; side walls also are of steel. I-beam brackets hold front and side plates rigidly in position. This is how it works:

Once the trench is excavated, the shield is lowered into position by crane. It then is attached by cable to a backhoe that pulls the shield like a sled along the trench bottom

The contractor keeps a pile of loose dirt in front of the shield when it is in use. As the shield moves along, it spreads the dirt. This provides a soft cushion for the pipe and helps maintain uniform grade at trench bottom.

Crane Feeds Pipe

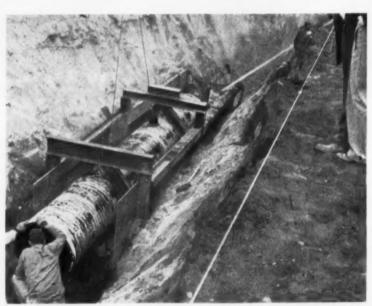
A crane feeds a 20-ft section of Armco's Smooth-Flo corrugated sewer pipe into the front end of the shield until the crane cables hit against the shield's forward side wall brace. Cables then are released and rehooked to lifting lugs on the pipe on the other side of the brace.

This operation is repeated at the rear brace to set the pipe end to end with the previously laid pipe.

Each new section of pipe is con-



TRENCH SHIELD has steel front that smooths trench bottom and two steel side walls to retain trench banks, eliminating need for sheeting. Backhoe pulls rig forward.



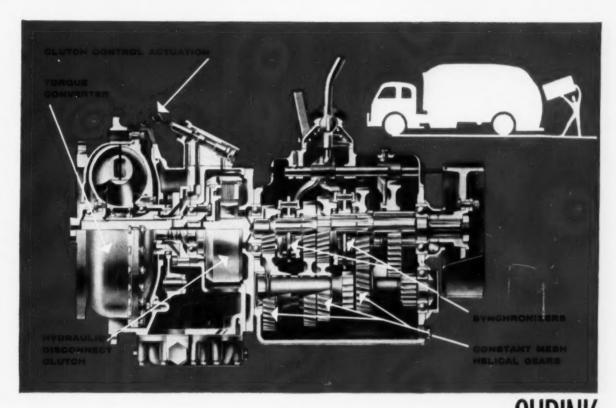
CRANE SLIPS corrugated metal pipe into trench shield. Cables then are unhooked and attached to lifting lugs on pipe on other side of brace so pipe can be pulled back.

nected to its predecessor by a three-corrugation-wide coated steel band.

After each 20-ft section of pipe is laid, the backhoe pulls the shield into its new position, and completed trench sections are backfilled.

"We lay as much as 340 ft a day," says John Gohr, president of the excavating firm. "With more experience on the shield we feel that we could place 400 ft daily on future jobs."

Superintendent for Niles on the job is Rex Hinman.



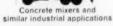
Watch those operating costs With CLARK TRANSVERTER on the job

A revolutionary "package" power train of seasoned veteran units

· Hydraulic disconnect clutch









Materials handling machinery



and oil field applications

Much less gear shifting—

• Torque Converter

No heavy friction clutch-

Most work can be done without shifts. Closely spaced ratios make shifts fast, smooth, quiet.

for vehicles in "frequent start" service

Eliminates the driver's "tired left foot." Hydraulic clutch is controlled by push-

button or light-pressure pedal. Inching

is easy, just by using accelerator.

Smooth starting, smooth acceleration-

No stalling, no lugging, no wheel slipping. Torque converter supplies a smooth power-flow—no shock-loading. Much longer life for drive-train.

Ideal accessibility for service-

Every unit is easy to get at. No special tools needed. No clutch adjustment required—big savings on costly down-time-

Available for OEM or field conversion—

Add up these vital benefits and you get just one answer: LOWER COSTS. It's easy to get the whole worthwhile story—send the coupon for the TRANSVERTER Bulletin.

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Inspecting their new 600' Blue Brute rotary compressors are John De Matteo (left), President of M. De Matteo Construction Quincy, Mass., and General Superintendent Frank Tupper

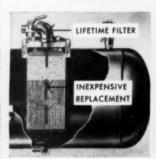
"SAVES US \$180 EVERY



Working side by side with the new Blue Brute rotaries are two Worthington 500' reciprocating machines bought in 1948 and "still going strong."



200,000 yards of rock are being removed by De Matteo in this multi-million dollar project. Hard at work are four Blue Brute wagon drills.



Two filters instead of one. Lifetime unit (top) removes 95% of the oil, never needs replacement. Final filter (bottom) is easy and inexpensive to renew.



Amazing accessibility. Using only standard tools we removed all principle working parts of the compressor and replaced them in forty minutes.



FILTER CHANGE, reports M. De Matteo Construction Co. about new Blue Brute Rotar

Construction Co. about the new Blue Brute Rotary

"Smartest idea in rotary compressors" says Mr. Frank Tupper, General Superintendent, M. De Matteo Construction Co. "Instead of one expensive filter, the new Blue Brute rotary has two: the Lifetime unit which never needs replacement and a final filter which is easy and inexpensive to renew. We figure to save \$180 every time we change filters."

The Lifetime filter that Mr. Tupper refers to is a vortex separator located in the compressor discharge. It removes 95% of the oil from the compressed air. It has no moving parts, never needs replacement. To remove the last traces of oil there's a final filter in the air receiver. It's a long life, low-cost, replacement part.

200,000 yards of rock. De Matteo is using the new Blue Brute rotaries on a \$3,244,180 project for the new Massachusetts "Southeast Expressway." Also working on the same job are two 500' Blue Brute reciprocating

machines bought in 1948 and according to Superintendent Tupper, "they're still going strong." They supply the power for four Blue Brute wagon drills and three Blue Brute rock drills being used to remove an estimated 200,000 cubic yards of rock.

See it in action. For a demonstration of the most modern rotary on wheels, get in touch with your nearest Blue Brute distributor. Available in 125', 210', 315' and 600' sizes. Or write for descriptive booklets to Section H-73, Worthington Corporation, Harrison, N. J. In Canada: Worthington (Canada) 1955, Ltd., Brantford, Ont.

VORTHINGTON



FILTERS give lowest cost per mile



Change over old type air filters with this new 99.+% efficient FRAM Filtronic Universal Air Filter



- . Installed quickly and easily
- · Low change-over cost
- Exclusive, FRAM patented, built-in gasket forms a perfect air-tight seal
- Easy to service and change—only one universal cartridge needed for your entire fleet
- For all engines having a maximum air flow range of 300-350 CFM

Now you can replace obsolete air cleaners with Fram Filtronic Universal Air Filters—the filter that's 99.+% efficient! Exhaustive laboratory and road tests prove that Fram Filtronic Air Filters give the best protection under tough operating conditions. That's because Fram's exclusive, patented, built-in gasket absolutely prevents by-passing of dirty air. All air must pass through the most efficient filtering material ever produced.

So cut down-time and maintenance costs—convert now to the air filter that's already original equipment on many great engines—the FRAM Filtronic Air Filter.

FRAM Corporation, Providence 16, R.I. Fram Canada Ltd., Stratford, Ontario

FRAM FILTERS



Gorham sterling silver offer extended to fleets!

Now, Fram extends the offer the whole industry is talking about—genuine solid sterling silver by Gorham—to you! Sterling silver that sells for \$24.00 a place-setting at leading jewelers is made available at a fraction of its cost with Fram merchandise. This is possible only because Fram and your Fram supplier are absorbing a substantial portion of the cost. See your Fram supplier or write today!



ONLY ESCO CAST 12M POINTS GIVE YOU ALL THESE ADVANTAGES!

- Abrasion-resistant, shock-resistant 12M castings that put the extra metal where it counts the most—at the wear points.
- 2 Engineered design that starts sharp, wears sharp and lasts longer, yet can be replaced almost instantly to reduce downtime.
- 3 Individual Brinell Testing of every point to assure the right degree of abrasion-resistant hardness at the tip and shock-absorption in the body.
- A choice of seven Point Shapes to fit your equipment to the job regardless of your digging condition.

There's a longer lasting ESCO Tested Point and Adapter to fit every digging tool.

GENERAL
PURPOSE ROCK PICK SHARP LONG ROCK FLARED

See your ESCO dealer. Ask for Catalog No. 187.



ELECTRIC STEEL FOUNDRY COMPANY

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MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
ESCO INTERNATIONAL, NEW YORK, N. Y.
IN CANADA ESCO LIMITED

"We get more Dig

Per Dollar

MARION

NELLO L. TEER COMPANY



say the managers of Nello L. Teer Company

GEORGE TEER Master Mechanic



DILLARD TEER Vice-President

"Specifically tailored to our digging conditions, ESCO Buckets have profitably increased our production," agree George Teer, Master Mechanic and Dillard Teer, Vice-President, Nello L. Teer Company, Durham, North Carolina.

The Nello Teer contracting firm operates five Marion 111-M machines, all equipped with ESCO 4-yard shovel dippers, each specially designed for the kind of digging encountered in their operations. The firm also uses ESCO 21/2-yard shovel dippers on seven of their ten Northwest 80-D machines, and 1-yard ESCO shovel dipper on their

Put a job-tailored ESCO bucket on your machine - and watch production climb! ESCO builds a complete line of dragline buckets, dippers, backhoes and orange-peels.

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FOUNDRY COMPANY

Expert Advice Keeps Rigs Working

SMART CONTRACTORS are quick to realize that distributor servicemen can be of tremendous help to men in their organizations who are responsible for keeping equipment on the move. Besides being expert trouble shooters, these servicemen also train operators, keep shop personnel abreast of new developments, and head off big maintenance bills.

But there is a basic difference between distributors who handle a tractor-scraper line and those who do not. Tractor manufacturers insist that their distributors maintain well - rounded service departments and these departments generally operate effectively. On the other hand, non-tractor distributors are not renowned for their service organizations. Manufacturers-and customers-can only hope that these distributors will render adequate service.

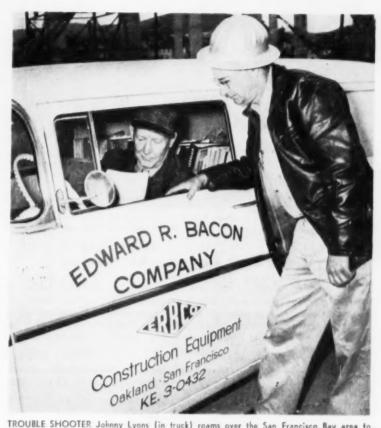
One exception to this rule is the Edward R. Bacon Co. of San Francisco. Erbco sells an extensive line of equipment ranging from Thor saw blades to Link-Belt cranes, but they do not handle a tractor line. Yet their service organization is strictly first class

To find out how a good service organization operates - whether it is connected with a tractor or non-tractor distributor - a CM&E editor spent a day with Johnny Lyons, a trouble shooter with Erbco who joined the company 30 yr ago as a mechanic.

Lyons is one of a group of 10 field servicemen who cover Northern California and parts of Nevada, checking and re-checking on Erbco-sold equipment. Besides Lyons, who is stationed at Oakland, Erbco trouble shooters work out of San Francisco, Sacramento, and Fresno.

The main function of this field force is to trouble-shoot sick equipment. They are not repairmen. Should it be necessary to take a piece of equipment back to the well-equipped Erbco shop, the traveling servicemen will make the arrangements, but they will not make repairs in the field.

This would take up too much of their valuable time. Because their experience with Erbco-sold equipment is usually much more



TROUBLE SHOOTER Johnny Lyons (in truck) roams over the San Francisco Bay area to check equipment sold by Edward R. Bacon Co. Behind Lyons is file of service manuals.



LINK BELT CRANE on Carquinez Bridge Project is checked by Lyons, who cleared up minor trouble in cable release by spotting glob of heavy grease on the drum.



JAEGER 600 compressor has been looked over monthly by Lyons since it was put in service a year ago on Carquinez Bridge job. It has never developed serious trouble.

EXPERT ADVICE KEEPS RIGS WORKING . . . continued

extensive than that of the contrators' crew, their main job is to spot sources of trouble or potential trouble. Another function of Johnny Lyons and his contem-

poraries is to accompany new equipment into the field. They check with the operators to make sure that they are familiar with the details of the new machine, and they see that the contractor's shop is supplied with proper service literature.

All the jobs performed by these servicemen are provided Erbco customers free of charge. Obviously this service is costly to maintain. But Erbco has found that satisfied customers are repeat customers, and the entire justification for the program is that it helps sell equipment.

Lyon's first job on this particular day was to check with the yard crew on several new machines that were scheduled for delivery. A Link-Belt HC-88 crane needed modifications to meet particular requirements. Lyons checked these, and they were all right. The crane went out for delivery.

At about 9 am Lyons climbed in his panel truck and set off. The service truck—literally a library on wheels—contains operation and service manuals for every type of equipment that Erbco handles. It also carries small parts when necessary.

First stop was at a Richmond machine shop where Ben C. Gerwick Co., Inc., had sent a Mc-

continued on page 108



Scoopmobile model LD 5P loading shot rock at Bowman Sand & Gravel Company, Albany, Oregon. Capacity of loader is $1\frac{1}{2}$ cubic yards.

100%
Breakout
Bucket
Action...
even in
shot rock

Loading shot rock is a job to test the stuff of any loader. But with 100% breakout bucket action this Scoopmobile makes it look easy.

The bucket clears a path the full width of the wheels to eliminate deflection on the tires. Four-wheel planetary drive gives power to spare. Full visibility, power steering, power shift forward and reverse transmission, and 4-wheel power brakes lighten the work of the operator. It's even easy for him to get in and out of the cab!

To learn how Scoopmobile will tame your tough loading jobs, see your nearest Scoopmobile dealer, or write us for information. You'll hear from us promptly.



DOUBLE GRAY

is the wire rope that's...

- extra strong
 field proved
 - · crush and abrasion resistant

Compare Wickwire Double Gray IWRC Wire Rope with the improved plow steel IWRC ropes you're probably using now. You'll see that Double Gray has a rated breaking strength that's 15% greater than the catalog breaking strength of these ropes. And it resists crushing and abrasion better, too. That's because Double Gray is made of extra improved plow steel—a new type of rope steel that's being widely praised for its superior strength and toughness.

Yet Wickwire Double Gray Wire Rope gives you even more! Because its makers have long been known for the care with which they make and test their ropes, you know you're getting a safe rope. Like all other Wickwire Ropes, Double Gray was thoroughly tested both in the laboratory and the field before it was offered to the trade!

Get the complete story today on how you can best use the extra strength and toughness of Wickwire Double Gray Wire Rope in your operations.

5088

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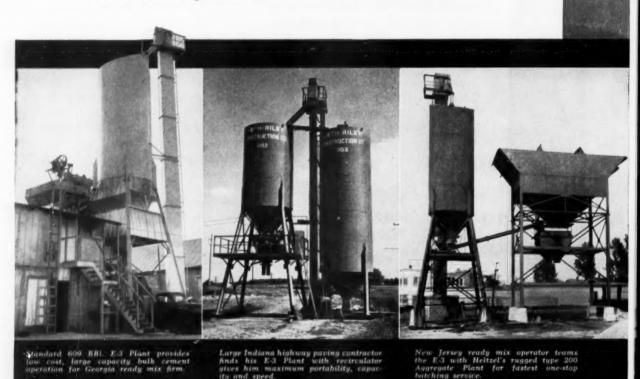
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LOOK FOR THE YELLOW TRIANGLE

Here's the Nation's Outstanding Bulk Cement Batching Plant Offer

Long known to be the best engineered plant, increased demand for the Heltzel E-3, has resulted in production economies you'll want to know more about







Ohio paving contractor selected this E-3 with recirculator after comparing with several other makes. He reports the plant is most versatile, fast and exceedingly accurate.

• The Heltzel E-3 Bulk Cement Plant has long been recognized as the industry's finest engineered plant. Now, because of an increased demand, Heltzel has set up a new production facility that has resulted in economies that enable us to offer this outstanding plant at standard equipment prices.

There is absolutely no quality reduction! You get the all butt-welded bin with rounded corners (fabricated by an automatic welding process) that assures smooth flow and guarantees water tightness. You have your choice of Heltzel's patented tubular valves—with or without rotary vane feed. The rugged wide flange, flare-leg supports that mean extra rigidity and truck room! All connections are out in the open, easily accessible for fast, easy erection or dismantling.

Select your capacity—from 250 BBls to 670 BBls—portable recirculators up to 1000 BBls each. Choose your batchermanual, semi- or fully automatic from 16 to 60 cubic feet including the outstanding Heltzel Twin Batcher designed for high production paving operations. Plants available with "unitized construction"—factory assembled in units for even faster erection and dismantling.

Whatever your needs you will want to get all the facts on this exceptional offer before you buy. Contact your Heltzel representative—or write direct.



THE HELTZEL STEEL FORM AND IRON CO., 435 THOMAS RD., WARREN, OHIO



MCKIERNAN-TERRY pile hammer is inspected at Richmond machine shop where it had been sent by contractor. Lyons diagnosed trouble, reported back to the contractor.

EXPERT ADVICE KEEPS RIGS WORKING ... continued

Kiernan - Terry hammer that needed rebuilding. Erbco had not sold the hammer. It was bought second-hand by Gerwick, and, somewhere in its long history, it had been rebuilt with other than McK-T parts. Erbco was interested in the hammer because Gerwick is a good customer and because repairs would call for McK-T parts, which Erbco sells. After inspecting the hammer, Lyons drove out to the Gerwick yard and told Gerwick's master mechanic the cause of the trouble and how it could be avoided in the future.

Next port of call was the site of the substructure for the new Carquinez Bridge (CM&E April, 1957, p. 163). Here Lyons took a boat to the caisson and looked over a Jaeger 600 Roto compressor, just as he has been doing at least once a month since the compressor was delivered to the job a year ago. Another compressor of similiar size but different make was also on the caisson. It had not been looked at by a service representative during the year it had been there.

And so it went for the remainder of the day. Late in the afternoon Lyons returned to the Oakland yard to catch up with his records and to see if any other calls for help had come in. If a contractor had called, he could be sure Lyons would be at the job site early the next morning.





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Power shifting... operating simplicity... independent track reversal.. forward operating position... low center of gravity...

are five important reasons why the Eimco 105 Tractor gets "extra" performance from its overhead or front-end loaders.

Eimco Unidrive, power-shift transmission combined with torque converter fluid drive, saves secconds every cycle and eliminates downtime due to burned facings or other clutch troubles. Without taking your left hand from the wheel, you simply manipulate power-shift levers for high, low, forward, reverse while the tractor is moving under full load. There's no reaching, no gear clash, no hes-

independent track reversal is especially advantageous in frontend loading. It permits this 105 to pivot sharply from the muck pile and get material into trucks faster. It gets either loader out of trouble quickly... a big factor on hazardous jobs.

A 105 operator is always "on top of his work". Without standing or "craning" his neck, he can see to attack the muck pile at the best spot for fast loading. This, combined with operating ease, greatly reduces fatigue... gets greater manhour efficiency.

Low center of gravity gives the 105 tractor extra stability... permits it to traverse 100% grades without tipping.

This combination of extreme tractor mobility and one of two high utility loaders, gives you a wide choice in adapting an earthmoving technique most profitable for your job requirements.

An Eimco Sales Engineer will help you decide which model fits into your job scheme most profitably.



EIMCO 105 FRONT-END LOADER 21/2 yard. . . 40,000 lb. break-out



EIMCO 105 EXCAVATOR 1½ yard... Overhead discharge

EIMCO CORPORATION

Export Offices: Elmco Bldg., 52 South St., New York City





ON THE CONNECTICUT TURNPIKE



No place for trucks you have to "baby"! Gammino's Macks are hauling close to seven million yards of rock and earth as the Connecticut Turnpike is rushed to completion. That means those mighty shovels are really moving as they drop the heavy, jarring loads of rock into the trucks beneath. It also means that Gammino's Macks are taking tremendous punishment, both from the hustling shovels and from the makeshift roadbeds over which they operate in an endless loading-dumping cycle.

"Sure, it's backbreaking work for any other truck," says Mr. Gammino. "That's why we use Macks."

No job's too tough for Gammino,

because... THEY

Want the real pitch on Mack can-do?

Ask Frank Gammino of M. A. Gammino Construction Company, Providence, Rhode Island. He'll talk Macks with you all afternoon.

Ask him about the small but important jobs, where Mack economy enables him to deliver at a profit.

Ask him about the big jobs, where the power and schedule-meeting dependability of his Macks pace the entire operation.

And ask him about the really rugged jobs—the chassis-jolting rock-loading jobs...the up-to-the-hubs-in-mud jobs...the jobs where his Macks work round the clock, rushing out big-yardage loads for weeks on end without a break or a breakdown.

Then ask him why he has still more Macks on order. We'll stand on that. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.



ON THE PROVIDENCE RIVER BRIDGE JOB

Gammino's Macks are keeping big buckets busy. Concrete, not excuses, is what this job calls for—any late deliveries mean expensive, profit-robbing delays. "With Macks on the job," says Mr. Gammino, "no one sits on his hands."

DEPEND ON MACKS

ON OVER-THE-ROAD HAULING OF CRUSHED STONE AND DIRT

... a wise contractor keeps a close eye on running costs—fuel, maintenance, down time, tire wear, etc. Mr. Gammino does just that, and he reports: "Nothing touches a Mack for ton-mile economy."



MACK first name for TRUCKS





NO CROWBARS NEEDED—Workman merely presses air gun against a fitting set in the center of dome and triggers an air blast.



EASY AS PIE—That's how Steeldome form for waffle-type slabs strips from hardened slab into workman's waiting hands.

Air Blast Blows Forms Free

A NEW METAL FORM for waffletype concrete joist construction can be blasted free from hardened concrete with a jet of compressed air.

Corbetta-Pavarini Construction Co. of New York, concrete subcontractors for the George F. Driscoll Co., also of New York, uses the domes and jet-air stripping in construction of the Bergen Mall Shopping Center in Paramus, N.J.

Normally, crowbars are used to release pan forms from under a slab after concrete has hardened. But with these forms, one man merely presses an air gun against a fitting set into the form while another man stands by to grasp the form as it is blasted free. The method protects smooth concrete surfaces from chips and scratches and leaves a ceiling suitable for finishing.

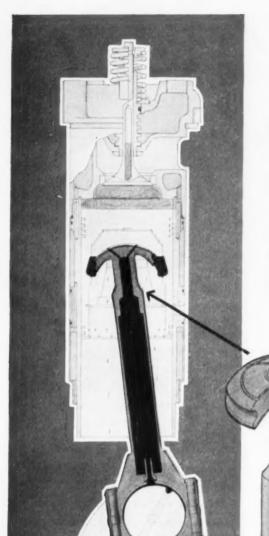
The form is the Ceco-Meyer Steeldome made by Ceco Steel Products Corp. of Chicago, Ill. Designed especially for exposed ceiling construction, the dome is a rigid, deep-drawn, one-piece unit. Flanges forming standard-width joist soffits are an integral part of the dome.

During erection, domes are butted at all soffits joints, eliminating the common defects of forms which must be lapped. The rigid, integral soffit flanges permit the economy of skeleton centering in one direction instead of two. Where attached or suspended ceilings are required under the waffle-type slabs, ceiling hangers are installed through holes in the form.

Domes have a void of 30x30 in. and an over-all plan size of 36x36 in. including flanges. Standard depths are 8, 10, 12, and 14 in. Ceco does not sell the domes; it rents, erects, and strips them.

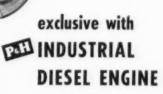


EASY TO ERECT—Formsetters place domes for waffle-slab on New Jersey shopping center job. Dome flanges are designed to form standard-width soffits. Domes are rigid, deep drawn.



another Pall first!

MUSHROOM
CONNECTING ROD
and
PISTON ASSEMBLY



Check these performance and maintenance advantages:

- Improved lubrication
- 21/2 times larger bearing area
- · Uniform distribution of wear
- Better heat dissipation
- · Longer ring and piston life
- Better oil control



P&H Industrial Diesel. 2, 3, 4 and 6 cylinder models for all industrial and construction applications. 40 to 280 H.P.

It's new. It's different. It's a product of P&H advanced engineering and design. It's still another reason why P&H Diesel users experience maximum performance with minimum operating and maintenance costs.

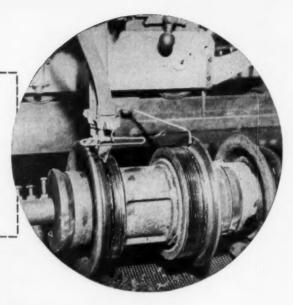
HARNISCHFEGER

Diesel Engine Division . Crystal Lake, Illinois

August 1957 - CONSTRUCTION METHODS and Equipment - Page 113

Does it pay to

REBUILD TRACTOR ROLLERS?



here's one answer...

This is a report from one of the country's largest tractor maintenance shops having complete facilities for crawler reconditioning. It particularly concerns rebuilt track rollers, a major item of wear. In this shop rollers are regularly rebuilt and hard-faced by the automatic electric welding process, using Stoody 105 on the running surface and flange.

About a year ago a tractor came into the shop for overhaul. The rollers were badly worn; those found suitable for rebuilding were returned to size with Stoody 105 and the internal assemblies thoroughly reconditioned. The balance of the rollers were discarded and replaced with standard parts. Following routine procedure, the shop foreman checked the entire crawler assembly to insure proper alignment—a highly important factor in reducing needless wear. After 2500 hours this tractor came in again for its customary overhaul. Inspection of the rollers disclosed the following:

The standard rollers, without exception, were worn from 3%" to ½" on the running faces; in all cases the internal assemblies required several replacement parts.

Hard-faced rollers showed negligible wear on running surfaces and the only replacements needed were new seals for internal assembly.

It is of course an accepted fact that rollers rebuilt and hard-faced with Stoody 105 by the automatic method give a service life considerably beyond that of standard replacements—at a much lower cost. The hard-faced roller with its superior abrasion resistance reduces uneven wear on the track rails by providing a smooth,

even working surface that allows free movement of the rails and resists grooving of the roller. Hence, wear on the internal roller assembly is also decreased.

Stoody 105, the alloy used in this application, was the first automatic wire of its type and is today the alloy generally preferred by principal shops. It has been proven by eight years of actual field use—assurance of maximum service life at reasonable cost.

Earth-moving contractors operating large fleets of tractors, shovels, buckets and crushing plants often find the installation of an automatic welding head a profitable investment for rebuilding rollers, idlers, house rolls, crusher rolls and similar wearing parts. Many contractors, however, prefer to send such work to a thoroughly equipped automatic job welding shop of which there are a number located throughout the country. A list of these job shops is available on request.

Complete information on automatic hard-facing installations and procedures will gladly be supplied—without obligation. You may consult your local Stoody dealer see the "yellow pages" of your phone book under "Welding Equipment and Supplies"—or write direct.

STOODY COMPANY

11972 East Slauson Avenue

Whittier, California

Record Size Rings Brace Huge Pit

THE WORLD'S LARGEST steelring walers were the answer to fast excavation of a huge pumping pit at Pittsburgh's new sewage treatment plant (CM&E, June, 1957, p. 73). Measuring nearly 110 ft in dia, the rings shored the giant hole without the aid of cross bracing during excavation and later while a mammoth concrete pumping structure was built inside.

Located only a stone's throw from the Ohio River, the pit had to be sunk 127 ft to intercept several sewer tunnels. The top third was in earth, the rest in rock.

A joint venture of McHugh-Allegheny-Drake started the job by excavating a large basin at the site. This helped reduce the braced depth somewhat and provided a level working area around the top of the pit.

The next step was to erect a 20-ft high circular timber templet around which MP-112 sheet piles could be driven. One ring of Commercial steel walers was mounted on the bottom of the templet and another on top to assure accurate spacing and alignment. Rings were 8-in. wideflange sections, 40 lb per ft. They were 21 ft long, bolted at the ends.

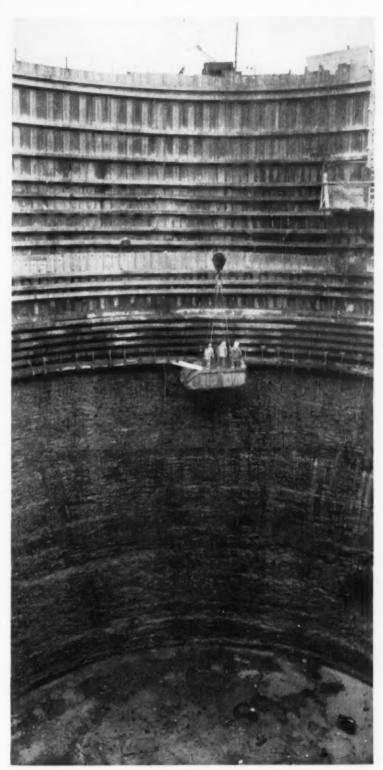
Sheets were driven 40 ft deep to refusal by a McKiernan-Terry 9B3 hammer. When they were all in, a 3½-yd clamshell excavated inside as additional rings were added. Ring spacing decreased gradually from 6 ft to 1½ ft. But at all times, adjacent rings were tied together with 1-in. rods.

McHugh continued excavating, waiting to hit rock. But he reached the bottom of the sheets before he reached rock. Dense boulders which had prohibited further driving of the sheets now pushed in the bottoms of the sheets, forcing a temporary halt in the excavation.

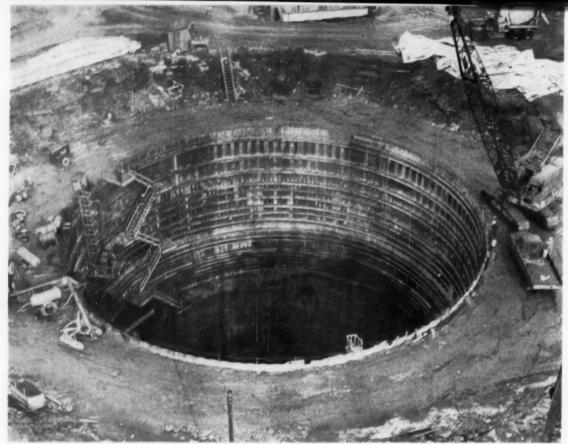
It was apparent to McHugh that bedrock was at least 12 ft further down, and the intermediate layer of water-bearing gravel and boulders would have to be shored and excavated.

Although working space was extremely limited, McHugh decided to drive a second circle of sheets just inside the first circle.

continued on next page



MUCK BUCKET raises men from bottom of 127-ft pumping pit. Top third of the pit is in earth, excavated behind steel sheet piling braced by 110-ft dia steel-ring walers.



CIRCULAR PIT only a few hundred feet from the Ohio River is tricky excavation job. Second circle of sheeting was driven inside

the first in order to penetrate through dense boulders and an intermediate layer of water-bearing gravel to bedrock.

RECORD SIZE RINGS . . .

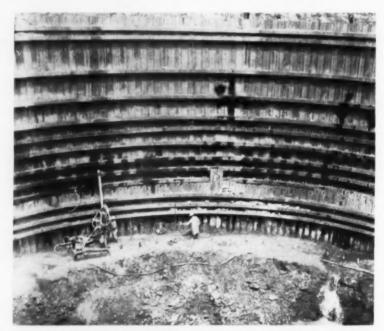
This time the sheets went down to rock. Excavation was resumed, and six more steel rings were added before bedrock was reached.

Below this level, the operation changed completely. No more bracing was needed; it was strictly blasting and mucking for the next 70 ft. Blast holes were drilled about 6 ft deep by an Air Trac. About 50 of the 3¾-in. holes were drilled for each shot. Blasting plans called for three pieshaped shots for each 6-ft lift. In this way, one crew could drill as another mucked. Generally, one shot was fired every day.

Two tractor loaders handled mucking—an Eimco and a TD-14. They dumped into a shop-built 7-yd bucket, hoisted by a Link-Belt Speeder crane.

Water was a big problem throughout the job, because of water-bearing soil and wetseamed rock. To dewater, Mc-Hugh employed a big Jaeger 10-in. pump powered by a General Motors diesel. It was a real work-borse

It was set up generally at the



AIR-TRAC drills blast hole about 6 ft deep through gravel and rock formation. Six more steel-ring walers will be installed against sheeting before bedrock is reached.

center of the pit, kept low during excavation to serve as a sump. In the rock section, two big pumps were employed—one at the sump and another on a platform hung at the base of the steel-ring walers. The latter handled all water continued on page 121

OLIVER OC-46

LOADER



Designed specifically as a loader, the OC-46 is an improved version of the famous Oliver OC-3, the outstanding tractor of its class. Now, with increased track length, wider track gauge and heavier frame, there's greater stability, more work capacity...and lower costs than ever. Small enough to ride on a 3-ton truck, it goes to any job in a hurry.

Play it smart with the new OC-46! Save time on hundreds of scattered assignments that otherwise call for expensive hand labor or tie up larger rigs. You'll be money ahead!

Geared for tomorrow's jobs with these work-speeding features:

- · 4-speed transmission adds flexibility and a faster work cycle
- · 150% increase in dumping reach at full dumping height
- Deep penetration—28" below ground level; powerful break-out
- Highest ground clearance of all small tractors
- · Low profile with high seat assures maximum visibility
- 5%-yd. bucket has greater roll-back and dump angle
- Compact engine delivers 22 drawbar h.p.
- Comfortable, box-type seat and better grouping of controls help operator get maximum production

This is the time to get all the facts about the sensational new OC-46, Ask your Oliver distributor to demonstrate or write for literature.



THE **OLIVER** CORPORATION

400 West Madison Street, Chicago 6, Illinois

a complete line of industrial wheel and crawler tractors and matched allied equipment



BACKFILLING AFTER TRENCHING and laying in pipe on a water main project, this American proves its on-the-job versatility. Note the exceptional operator visibility of this 100 Series machine owned by F. W. Forst Co. of Omaha.

CONTRACTOR TRENCHES, LAYS PIPE, BACKFILLS WITH NEW 1/2-YARD HOE

Digging 1000 feet of water main trench in the Parkview Addition of Fremont, Nebraska, F. W. Forst Co., uses American's new 100 Series Backhoe. This versatile ½-yard hoe is cutting a 6-foot deep, 30-inch wide trench in wet, heavy clay. The contractor is also using his American to lay in the 18-foot long, 475-pound cast iron pipe sections. By installing a backfill plate attachment, the crane completes the job with fast, powerful sweeps that fill the trench quickly. Forst is performing this job for the City of Fremont.

Perfect balance is the key to smooth, efficient crane performance! It's precise balance that keeps Americans flat on their crawler pads when they dig in. Even on full reaches down to 17 feet these hoes won't tilt up on their toes!

With any front—hoe, shovel, dragline, clamshell, magnet or crane boom—American 100 Series offer perfect balance achieved through efficient design and elimination of deadweight. This feature cuts total machine weight to eliminate stripping for highway travel!

You can get complete specifications, the how and why facts on American Cranes designed to do every job from excavation to steel setting, from your nearby distributor. Call him soon—he has a complete line of crawler and truck cranes in capacities from ½-yard, 12½-tons up!

(Advertisement)

"EASY ON THE OPERATOR" is Duane Cliffton's opinion of the American 100 Backhoe he operates for Forst Company. He adds, "It's easier to operate than any other machine Γ've been on. I like the brakes . . . and I can feel the load!" Operators find American's wide-range cab visibility and 13½-inch ground clearance are important features when trenching in rough, uneven terrain.



"MORE CRANE FOR YOUR MONEY!" That's the benefit you get from American Hoist's 75 years of experience in the design and manufacture of cranes, derricks and hoists. American cranes have worked under every possible handicap while doing every type of job. It's this experience in a worldwide proving ground that has given American engineers the vital know-how essential in building efficient, trouble-free American cranes. Before you buy your next crane, talk to your American Distributor. He'll show you why American Cranes have captured first place in preference and performance with owners everywhere.

DESIGNED TO HANDLE a variety of fronts, on crawlers or rubber, is American's 34-yard, 2234-ton 200 Series. Like the 100 Series, this machine incorporates many vital big crane features performance-proved in American 300 and 700 Series machines. Big crane features keep your job on schedule with sustained production month after month. Efficient design pares operating and maintenance costs to an amazingly low figure. Your American Distributor has all the facts on the American line!

A HIGHLY MOBILE SHOVEL, this American 100 Series ½-yard machine gives contractors high speed, trouble-free service. Because of their exceptional performance on the job—their mobility and speed between jobs—American Truck Cranes do more work in more places every day. A complete selection of interchangeable fronts lets you tailor your American to the job at hand. Low initial cost and contractor-proved low operating cost make the 100 Series Truck Cranes the value buy of the year!

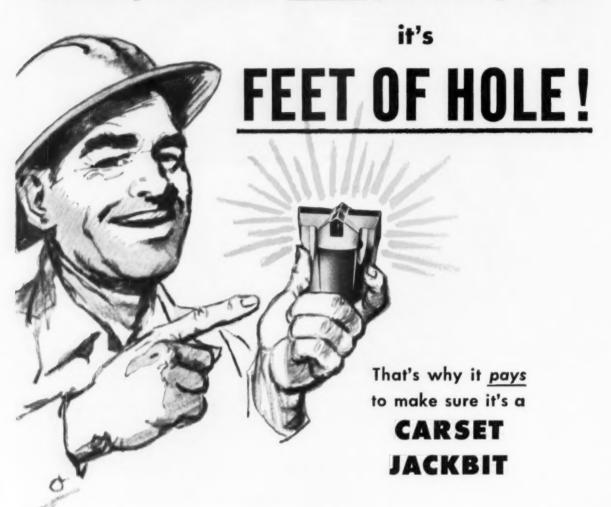
AMERICAN HOIST

and Derrick Company

1882-1957 **5** years of service

St. Paul 7, Minnesota

It's not just a bit of metal you're buying...



Let's face it — most carbide-insert rock bits look pretty much alike. But put a bit on a rod and drive it deep in solid rock and you'll find that they don't all behave in exactly the same manner. This all-important difference can be measured in only one way — and that's feet of hole. The bit that gives you maximum footage per

dollar of bit cost is the one you want on your job.

Measure CARSET JACKBITS by this yardstick (those who know do) — on any drilling job — in any type of rock. Compare their long-term performance with any other bit you've ever used. We are confident that the results will speak for themselves.

Ingersoll-Rand



DRIFTERS . JACKDRILLS . JACKHAMERS . CRAWL-IR DRILLS . CARSET BITS . AIR TOOLS . COMPRESSORS

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MUCK is excavated by TD-14 tractor shovel and dumped into a shop-built 7-yd bucket. Three pie-shaped shots are made for each

6-yd lift. In this way, one crew can drill while another crew mucks. Generally, one shot is fired every day.

RECORD SIZE RINGS . . . continued from page 116

collected by a gutter that was built around the base of the bracing.

Huge quantities of water continued to pour into the pit even after it had reached finished grade. Water poured down like rain over most of the pit, making it difficult to construct the massive concrete pumping structure inside. To contain the spray of water, McHugh hung huge sheets of VisQueen plastic film from the bottom ring of steel walers. This directed the water to the periphery of the pit where it ran to a sump. A 6-in. Jaeger pump lifted this water about 60 ft to a tank. hung from the bottom ring of walers. This tank also received all water collected by the gutter. Stationed next to the tank was the 10-in. Jaeger, which lifted water out of the pit and pumped it into the river. Together, the two pumps moved about 150,000 gal per hr.

A late foundation design change required some additional work before concrete placing could start. To provide against an anticipated buoyancy uplift of about 14,000,000 lb, engineers called for hold-down bars to be anchored in the rock across the floor of the pit. McHugh drilled about 360 holes 20 ft deep with a Mayhew rotary and a 4¾-in. bit. Hold-down bars 1¼ in. in dia then were embedded in the rock to anchor a 5-ft concrete slab.

McHugh designed the sumps and dewatering system so that they would not interfere with construction. Grout pipes are located at all strategic points to permit the contractor to plug all gaps in the structure which were left open for dewatering purpos-

Zak Taylor was superintendent for McHugh-Allegheny-Drake. John Laboon is chief engineer and Richard Dougherty is chief construction engineer for the Allegheny County Sanitary Authority



SHEETS of VisQueen film hang from water to lead water down to sump.

Bigger cargo area!

Another new and bigger Forward Control 'Jeep' Truck—the FC-170—puts a big 9-foot platform stake body on a wheelbase only 103½-inches long. This 7,000-pound GVW workhorse has room for 49 bales of hay, 35 bags of cement, or 60 bushel baskets. And the bed is only 35-inches from the ground for back-saying case of loading!



"Go-anywhere" action!

The new 'Jeep' FC-170 Truck sets a new standard for "big-load" maneuverability. It delivers payloads of up to 3500-pounds to areas ordinary vehicles can't reach. The spacious Safety-View cab puts you in a "Forward Control" position—lets you maneuver on or off the road with greater command of any driving situation!



Tough-job traction!

The extra traction of FC-170 4-wheel drive, and its wide 63-inch tread, take you "almost anywhere" with ground-gripping stability. It shifts easily into conventional 2-wheel drive for highway travel. The high-torque Hurricane 6-226 engine delivers real working power at low cost. It's ready for your bigger, tougher jobs!



New Jeep Forward Control

4-Wheel Drive FC-170

Willys...world's largest manufacturers of 4-Wheel-Drive vehicles

...other members of the famous 'Jeep' family:



Forward Control 'Jeep' FC-150

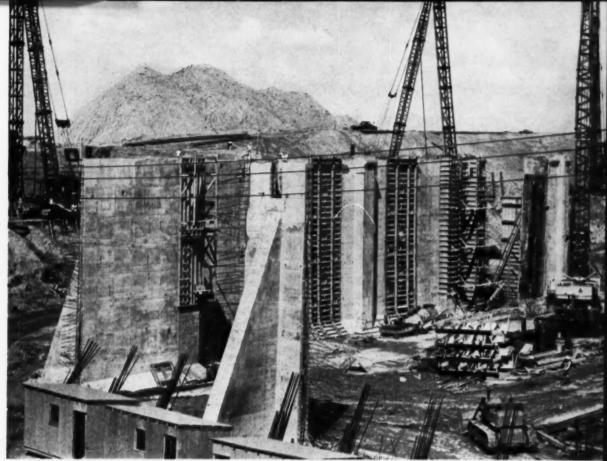


Universal 'Jeep'



'Jeep' Utility Wagon

See 'Jeep' vehicles at your Willys dealer



ADJUSTABLE STEEL FORMS, which are handled easily by Bucyrus-Erie 71B crane (right), allow 41-ft high retaining walls to be

poured in a single lift. Rigs in background are driving cast-inplace Cobi piles for three 400-ft exhaust stacks.

Steel Forms Take 41-ft Pours

STEEL WALL FORMS, some of the tallest ever designed, allow the J. A. Jones Construction Co. of Charlotte, N. C., to pour 41-ft-high retaining walls in a single lift. Jones is using the steel forms for the substructure of a steam generating plant near Memphis, Tenn.

The retaining walls surround a 270x572-ft concrete slab that in some places reaches a depth of 12 ft. The foundation rests on 6,000 cast-in-place Cobi piles.

Blaw-Knox fabricated the specially designed steel forms for walls, numerous counterforts and pilasters, and a series of water tunnels for the plant, whose power output eventually will rival that of the entire St. Lawrence Seaway development.

Only two sets of wall forms, one 36 ft long and the other 24 ft long, are needed for the 1,684-ft-long retaining wall. To make

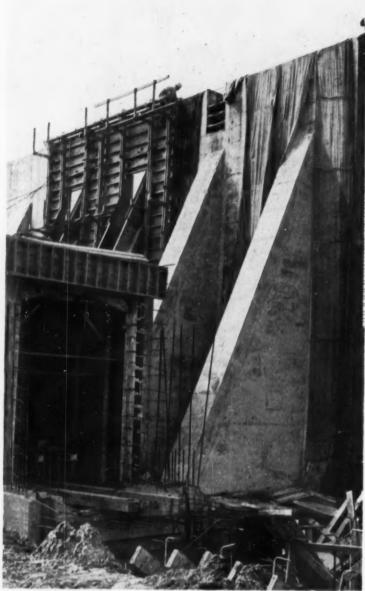
handling easier, the forms are built in 12-ft panels so that the 41-ft lifts can be poured in 12, 24, or 36-ft sections. The contractor is following a skip and fill pattern.

Both back and front faces are fully adjustable to meet design differences in thickness, spacing, slope and depth of the counterforts and pilasters. These adjustments are made on the ground before the forms are spotted by a Bucyrus-Erie 71-B crane.

J. A. Jones is averaging a completed 24 or 36-ft section every 4½ days. It takes only one day to adjust and spot the counterfort forms, and placing re-steel takes two days. The front form is placed in only 4 hr because it is aligned with the back form, which is spotted first. Concrete is delivered to the job at the rate of 30 yd per hr by transit mix trucks operating from a batch



FOLLOWING skip and fill pattern, crane spots back wall and counterfort form.



SAME TRAVELING FORM handles both 10x15-ft discharge tunnel (above) and 8x12-ft intake tunnel. Jacks adjust elevation. Turnbuckles, also used for stripping, control spread.

STEEL FORMS ... continued

plant located 4 mi from the job site.

Project superintendent Sam Aaron credits the reusable steel forms with cutting 40% from the original cost estimates for wood forming. Most of this saving results from the ease with which the forms can be adjusted, handled, spotted, and stripped. Oversize tie rods, which reduce the number required, also speed erection.

Specifications require that seven days elapse before a new pour is made against a construction joint. Because of this requirement, forms that will stand a 41-ft pour are particularly advantageous, according to Aaron. The steel forms also make the skip and fill pattern practical.

Specifications for the foundation slab, which is being formed conventionally with wood, are striking. To support three 250,- 000-kw steam generators, the contractor is pouring 45,000 yd of concrete reinforced with 3,500 tons of steel into a 270x572-ft mat. The foundation varies in thickness from 4 2/3 ft to 12 ft. Concrete for the slab, as well as for the walls, is 4,000 psi at 28 days.

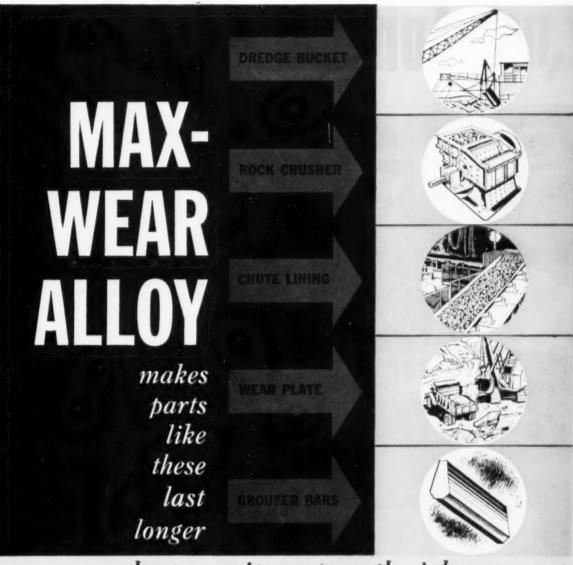
Supporting this structure and three 400-ft high smoke stacks are 7,000 cast-in-place Cobi piles. The corrugated steel shells are driven to an average depth of 60 ft with an air-expanded mandrel and filled with concrete. Requirements for the 121/4-in. dia piles, which are spaced on centers varying from 41/3 to 42/3 ft, are 50 tons bearing and 25 tons uplift. They penetrate at least 5 ft into a layer of coarse sand underlying the area. The subcontractor, C. L. Guild Construction Co. of East Providence, R. I., has four driving rigs placing the 7,000 piles.

A single 36-ft traveling steel form is used for both the 10x15-ft discharge tunnel and the 8x12

continued on page 128



COUNTERFORT FORM adjusts to meet differences in slope, depth, and thickness.



-keeps equipment on the job

Max-Wear Alloy Steel (13% manganese, 2% nickel) is work hardening! This means the more it's used the harder the surface becomes (up to 500/550 BHN). But only the surface hardens; the interior of the steel is unaffected. As a result, Max-Wear parts have truly wear-resistant surfaces plus high strength and toughness internally.

When you make parts like those shown with Crucible Max-Wear, you reduce downtime, cut repair and replacement costs. For Max-Wear resists repeated heavy impacts and abrasion—just what you need on jobs where equipment takes a bad beating.

Crucible Max-Wear is especially practical for repairs in the field. It can be formed cold or at red heat, and is easily shear or torch cut and welded. No annealing is necessary after these operations—a big advantage in the field.

Max-Wear is now available in rounds, squares, plates and special grouser shapes. If you are looking for an easy-to-use alloy steel that will give you longer service under impact, wear and abrasion, try Crucible Max-Wear. Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.

CRUCIBLE

first name in special purpose steels

Crucible Steel Company of America

For operating ease



Gar Wood Excavators give you Independent Travel as standard equipment! Operator can hoist or swing while moving. Direct manual controls make for speed and accuracy. Power-actuated drum clutch reduces operator fatigue. Compact design of machinery deck simplifies maintenance.

The Gar Wood-Buckeye 308 Ditcher is built for tough jobs. Power for traction and digging is taken directly from the engine transmission through separate output shafts. No open jack-shafts to waste power. More anti-friction bearings mean less wear . . . less power lost to friction. The result is more power where it pays . . . at the digging wheel!

GAR WOOD

PLANTS IN WAYNE AND

that boosts production, go Gar Wood-Buckeye

You pay for power . . . so choose a ditcher that lets you use it! Simplified controls on Gar Wood-Buckeye ditchers put power to work with less operator effort. The result: greater production, more ditch per dollar.

Here's why Buckeyes are easier to operate: "Live" hydraulic wheel hoist gives you quick, accurate positioning of the digging wheel. Hydraulic conveyor drive provides cushioned power with three discharge speeds in either direction... adjusts instantly to handle any

volume of spoil. Wheel hoist and conveyor drive operate independently of each other... no need to stop digging-wheel or forward travel. All controls are grouped together for operator convenience.

What it means to you is smooth, low-cost ditching...less time adjusting for obstructions or changing conditions. Check these advanced features yourself. Contact your Gar Wood-Buckeye dealer, or write to: Customer Service Dept., Gar Wood Industries, Inc., Wayne, Michigan.



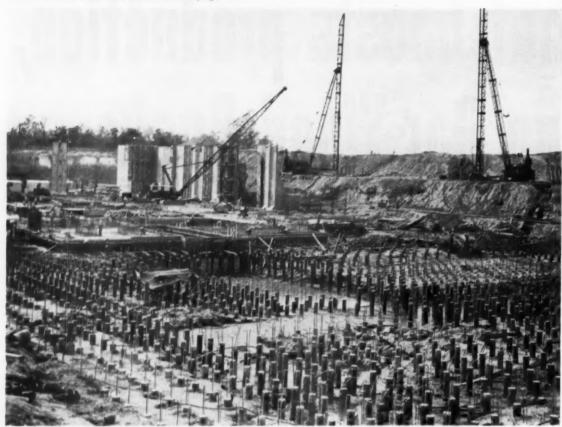
Gar Wood - Suckeye Hi-Way Widener will help you increase your profits from the big secondary-road improvement program! This one-man, one-pass machine digs a mile of finished subgrade per day . . . can easily pay for itself on a single job. Digging wheel quickly swings to the rear for over-the-road travel.



Gar Wood-St. Paul Dump Bodies and Hoists speed your hauling cycles. Twin lift arms are anchored together... exert equal lifting force regardless of load distribution. One-sided lift-strains are eliminated... dumping is smooth and safe, even on steep slopes. Hoist is easily serviced with ordinary truck tools.

INDUSTRIES, INC. Wayne, Michigan

YPSILANTI, MICH.; FINDLAY, OHIO; MATTOON, III.; RICHMOND, CALIF.



SEA OF PILES support 270x572-ft foundation slab that varies in thickness from 4 2/3 to 12 ft. Slab took 45,000 yd of concrete. Seven

thousand cast-in-place piles were driven to an average depth of 60 ft for slab and three exhaust stacks.

intake tunnel. Form elevation is adjusted by jacks, and spread is manipulated by turnbuckles that are used to strip the form. Another 36-ft steel form is being used to form three 7x7-ft circulating tunnels. These are recessed in the foundation mat.

J. A. Jones began construction of the plant, which is scheduled for completion in 1965, last September. More than 200,000 yd of dirt were excavated, principally with a Page walking dragline, and the dirt was diked around the hole. This will be backfilled to within 2 ft of the top of the retaining wall when concreting is finished.

Working with Aaron for J. A. Jones are George Marett, project engineer, and Jess W. Vincil, field superintendent. Burns and Roe, Inc., of New York City, designed the plant for the Memphis Light, Gas & Water Div. David H. Kregg is project engineer, and W. A. Weston is field superintendent for Burns & Roe.



CIRCULATING TUNNEL is formed with 36-ft section of 7x7-ft traveling form. Same form was used on two other tunnels, which are recessed in foundation.

big lift. letdown

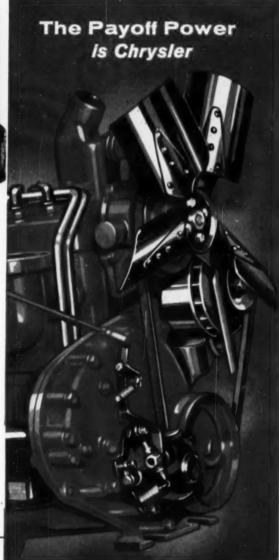




Erickson power lift trucks have a capacity up to 20,000 lbs.! To assure balanced weight dis-

tribution-with no letdown in efficiencyspecial ballast is shifted hydraulically from front to rear of the truck. To assure dependable, trouble-free power - with no letdown on the job-Erickson chooses Chrysler Industrial Engines.

CHRYSLER INDUSTRIAL 33, in-line 6 Engine (265 cu. in. displacement) powers the Erickson Power Lift Truck and many other makes of equipment in the construction and materials handling fields. There are four Chrysler in-line 6s, two V-8s-ranging from 230 to 354 cu. in. displacement.



Write Dept. F8, Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan, or see your nearest Chrysler Industrial Engine Dealer.

- For specific detailed information
- For descriptive literature

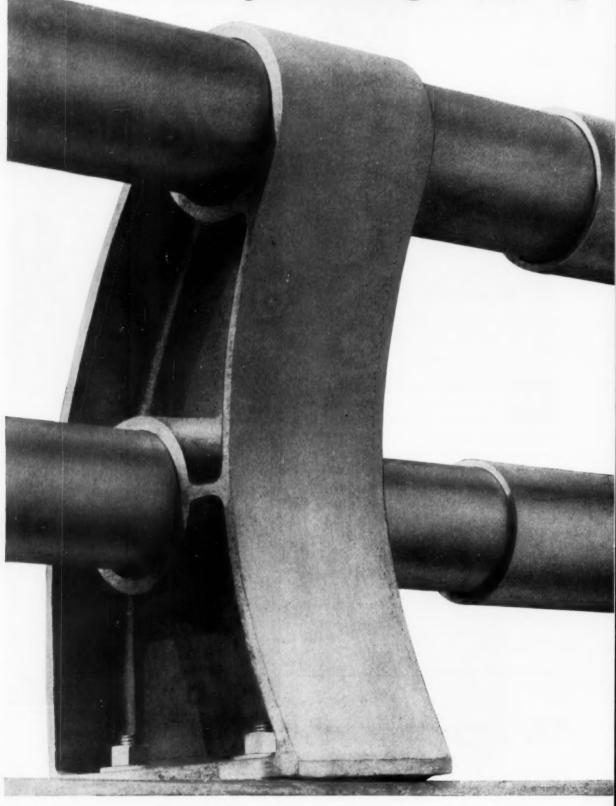
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Chrysler

INDUSTRIAL ENGINES

INDUSTRIAL ENGINE DIVISION . CHRYSLER CORPORATION

Another Flynn bridge railing



Page 130 - CONSTRUCTION METHODS and Equipment - August 1957

installed to be forgotten

Lightweight aluminum, it will never rust, never need paint. On the new Hampton Roads (Norfolk, Va.) Bridge, this lightweight Flynn railing has been installed for good—in fact, to be forgotten. Maintenance crews can forget about painting and repairing it, because Flynn railing, rail seats, end posts, balusters, anchor bolts, and accessories are made of non-rusting, durable aluminum.

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Is Industry Creating A New Breed of "Bonus Babies"?

THE STARTING SALARIES offered to this year's June graduates give the impression that industry is creating a new breed of "bonus babies." This is the term baseball fans apply to sturdy youngsters whose talent for hitting and throwing gets them payments of up to \$100,000 and other benefits for signing a contract.

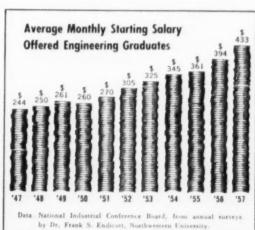
For several years industry's demand for young college graduates, especially in science and engineering, has outrun the number receiving degrees. Competition for these young people has steadily pushed up the starting salaries and has induced many companies to indulge in lavish recruiting programs. This year engineering graduates are being offered well over \$400 a month, and even liberal arts graduates find numerous offers at \$400 or more. Only ten years ago the salaries offered senior engineering students averaged less than \$250 a month.

But any employer who assumes that high starting salaries alone will assure him the number of June graduates he wants is likely to be disappointed. A recent study by the McGraw-Hill Classified Advertising Division shows that most young engineers and scientists going into industry are more interested in their opportunities and in a company's future than they are in the size of their first paycheck.

Money Isn't Everything

In the McGraw-Hill survey, 2,596 recentlyhired engineers and scientists employed in 57 companies listed the factors they had considered before accepting a position. The replies of the younger engineers and scientists—those with less than five years' experience—have great significance for employers who want to make any impression in the highly competitive market for college graduates.

- Potential growth of the company was listed by more young engineers and scientists than any of the 42 other items on the list as a factor that influenced greatly their decision in accepting a position.
 - Challenging opportunity was second.
- The company's prestige and reputation ranked third.



Note: These figures were compiled during the fall previous to graduation and have risen by commencement in recent years.

- Progressive research and development program was fourth.
 - Starting salary ranked only seventh.

Job and Future Most Important

As a group, the factors relating to the nature of the job, its future and the company's future had by far the greatest influence in attracting young engineers and scientists to their present positions. These include three of the top four attractions—potential growth of the company, a challenging opportunity and a progressive research and development program. Other factors in this group are the company's facilities, quick advancement, self-direction or little supervision, chance to work in a certain field, small size of company and rewards for individual accomplishment.

The second most important group of attractions had to do with prestige. These include the company's prestige and reputation, executive or professional standing and association with leading men in the field. Third in importance were financial considerations—starting salary, regular salary increases, financing of relocation, paid vacations and holidays.

A less important group of factors influencing young scientists and engineers were essentially social. Geographic location and educational facilities in vicinity ranked fairly high. But recreational facilities, suburban or country living, pleasant housing and cultural considerations had little appeal.

Ranking lowest, by a good margin, were factors having to do with security—permanent position; health, life and surgical insurance; retirement or pension plan; and sick leave.

It is interesting to note that some of the factors which influenced the **smallest** percentage of young engineers and scientists were country club memberships, use of company car, at-cost or low-cost eating place, travel opportunities abroad and being able to buy the company's products at a discount.

A Lesson For Employers

The lesson of this survey to employers who

What Factors Influence the Job Selections of Young Engineers and Scientists?

Factors Influencing Decision Greatly	Percent Listing Factor
Potential growth of company	55%
Challenging opportunity	53
Company's prestige, reputation	44
Progressive research and development program.	41
Geographic location	37
Permanent position	35
Starting salary	34
Educational facilities in vicinity	33
Regular salary increases	31
Chance to work on specific project, or in certain field	27
Company's facilities (laboratories, technical libraries, etc.)	25
Tuition for graduate study	25

Based on replies by recently-hired engineers and scientists with less than five years' experience to questionnaire distributed by McGraw-Hill Classified Advertising Division.

hope to recruit more young engineers and scientists is clear. High salaries and other financial appeals are important. But, at a time when high starting salaries are offered in abundance, our young graduates are interested even more in being with companies that will grow and in jobs that will permit them to grow. They are interested in jobs that offer opportunities for advancement, financially and professionally.

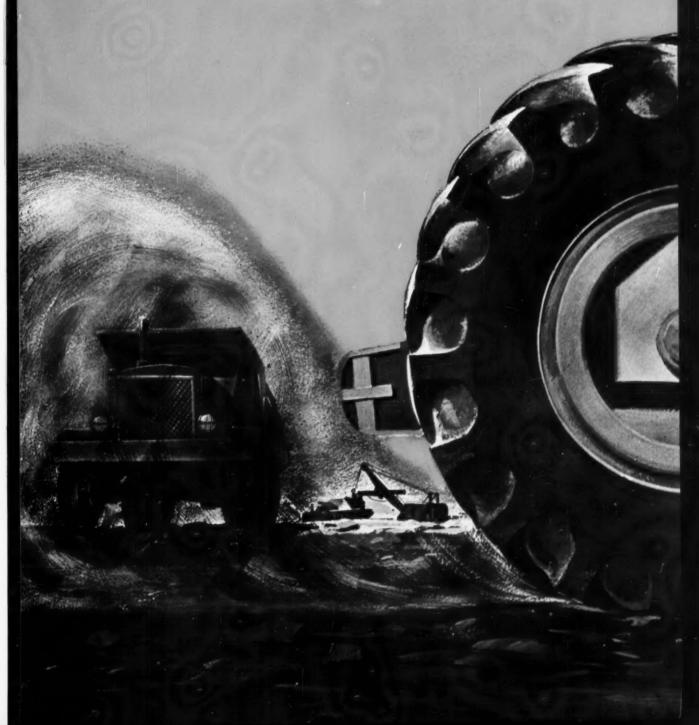
Were the young scientists and engineers who participated in the survey trying to impress somebody with their motives? If so, it could only have been to impress themselves, for all were asked to return their questionnaires unsigned.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments, Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

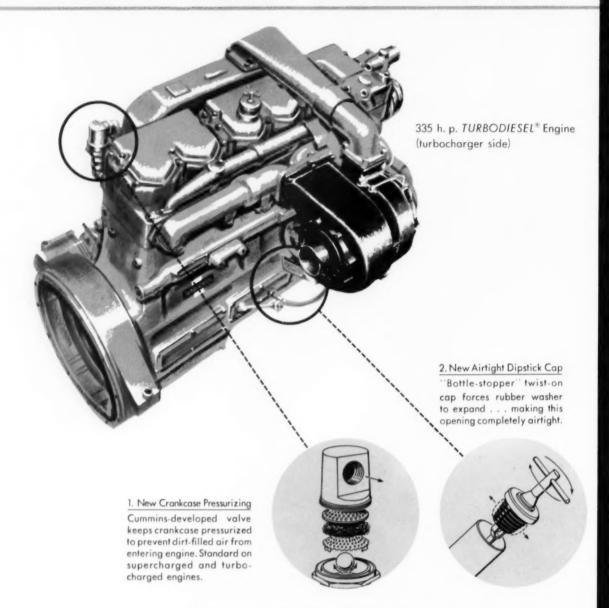
Donald C Mc Graw

McGRAW-HILL PUBLISHING COMPANY, INC.

CUMMINS RESEARCH DEFEATS DIRT!



ANNOUNCING NEW CUMMINS



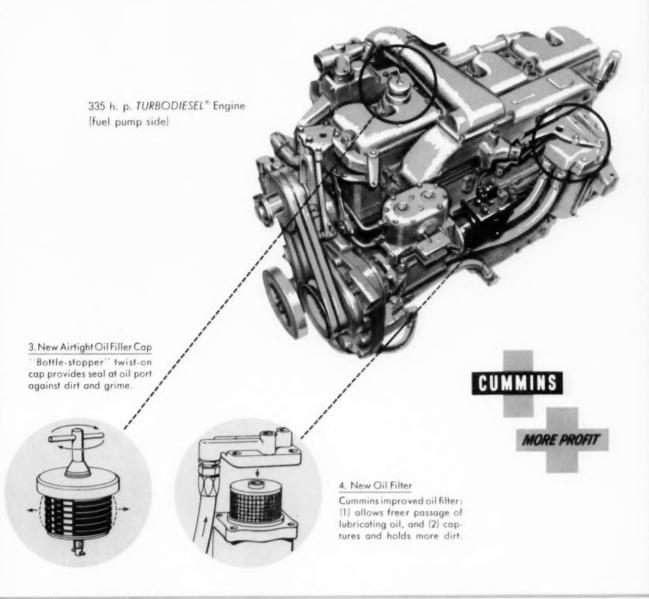
Cummins Oil System... defeats dirt!

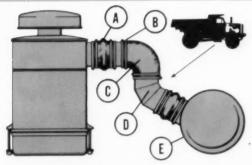
Cummins developed Crankcase Pressurizing (1) builds a predetermined amount of pressure *inside the engine*. This *low* pressure keeps dirt from entering at loose seals, worn gaskets and loose connections. New airtight dipstick and oil filler caps (2 and 3) give positive seals against dirt and abrasives. Cummins specially designed oil filter (4) gives complete, continuous oil filtration and is more efficient in capturing and holding engine-damaging impurities.

Cummins Air-Induction System... defeats dirt!

A secondary way dirt enters an engine is through the air intake system. The following Cummins firsts (see right), coupled with the oil bath air filter, give maximum protection against dirt: (A) specially developed "hump" hose; (B) airplane-type clamps; (C) 90° molded rubber hose; (D) stainless steel welded tubing; (E) newly designed dry-type air filter. Cummins Air-Induction System provides the most modern and efficient protection available against the effects of dirt.

DIRTPROOFING SYSTEM





Cummins Fuel System... defeats dirt!

Dirt sometimes makes its way into diesel fuels, subjecting the moving parts in the fuel system to excessive wear. Here, too, Cummins has developed superior protection for construction diesels. The PT system's fuel filter eliminates harmful contaminants... keeps dirt from entering the fuel system... passes through dirt-free fuel. Cummins new dirtproofing system is just another reason why more and more contractors specify their power and Standardize on Cummins!



Cummins dirtproofing accessories are available in kit form right now! Your Cummins Distributor can convert models in the field with minimum delay. He can also arrange for you to see the new 28-minute film, "Operation Hourglass," showing how Cummins research has overcome the devastating effects of dirt on diesels. Defeating dirt is another great Cummins achievement. It's just one more reason why, for the last 25 years, Cummins has led in the development of high-speed, lightweight diesel power for automotive, industrial, construction and marine users.

Cummins Dirt Protection features are available on heavy-duty construction equipment made by:

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Cook

Crane Carrier

Dart Diamond T

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COMPRESSORS

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COMPACTORS

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Wagner

Westfall

CRUSHERS

Bros

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Rogers Universal

DRILLS

Bucyrus-Erie

Reich

PULVERIZERS

Bros

Pettibone-Wood

GRADERS

Adams

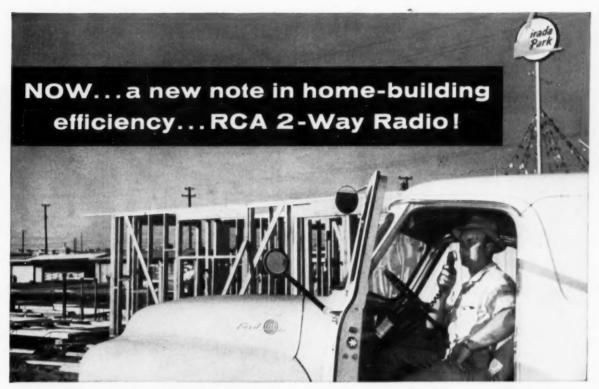
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AUGERS Compton

CUMMINS ENGINE COMPANY, INC. COLUMBUS, INDIANA

EXPORT — CUMMUNS DIESEL EXPORT COMPORATION — COLUMBUS, INDUMA, U. S. A. — CADLE: CUMBEX IMS ENGINE COMPANY UNLITED — SHOTTS, LAMADYSHIRE, SCOTLAND — CABLE: COMSCOT







The two-way radios installed in the maintenance vehicles, sales and other executive cars of the Larwin Company—top rated builders of homes in Southern California—transmit talk, not musie! But, it pays off in sweet profits . . . by keeping them in touch with project sites often several miles apart. Communications costs have been cut by \$500 per month, to mention one big saving.

Other advantages are reported by three key officials... Sidney Cagan, Sales Manager, notes a 100% increase in efficiency in his operation, faster escrow clearances, extra good service to customers. Purchasing Agent B. M. Moore says it speeds up completion

work by keeping superintendents informed of delivery schedules. With more than 1000 homes in 5 different tracts, the maintenance crew under Ed Meibos saves thousands of dollars annually for the company by getting the jump on sudden repairs and storms, eliminating needless trips. In real emergencies, such as accidents to workmen, the radio proves invaluable in getting medical attention without delay.

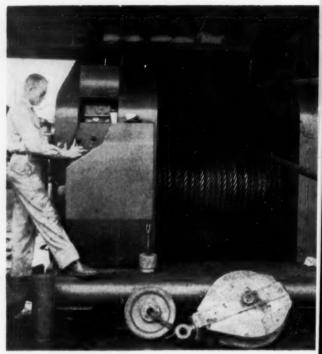
The Larwin Company is enthusiastic about two-way radio and, as a builder of fine homes, Larry and Bill Weinberg's successful firm has understandably standardized on the finest in radio . . . RCA.

Larwin Company installation consists of RCA Citizens Band Radio, Carfone-450. Four 15-watt base stations, 2 remote control units; 6 15-watt mobile units. Use coupon below for additional information about RCA 2-Way Radio for construction applications.

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	Please send me complete information on RCA 2-Way Radio use in the construction business.
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CAMDEN, N. J.	ADDRESS
In Canada: RCA VICTOR Company Limited, Montreal	CITYZONESTATE



STEEL AND CONCRETE SLED at nose of pipeline mounts pair of pontoons. Here, it enters surf at start of 7-mi pull.



GIANT WINCH on barge is capable of more than 1,000,000-lb pull on pipeline. Operator receives signals via two-way radio.

Pacific Ocean Outfall Pulled

SPECTACULAR LAYING of a 7-mi ocean outfall off Los Angeles, Calif, has blasted a whole gallery of construction records. It's the longest and deepest major outfall ever laid. And it's the fastest construction of its kind on record.

In only 7 days 11 hr, the contractor pulled a 22-in. air-filled steel pipe into the Pacific Ocean and left it on the sandy floor 300 ft below the surface.

It's impossible to quote any previous records; the job simply is beyond comparison. Other pipelines have been pulled into the ocean. But never such a long distance, through a surging surf, at such a depth, and in such a short time.

Credit for planning and executing the enterprising venture goes to a team composed of the City of Los Angeles, their engineering consultants, Hyperion Engineers, and the joint-venture firm of Healy-Submarine-DeLong. Actual assembly and installation of the unique cement-lined outfall was devised by submarine pipeline specialist S. V. "Sammy" Collins, of Collins Construction Co., Inc., Port Layaca, Tex.

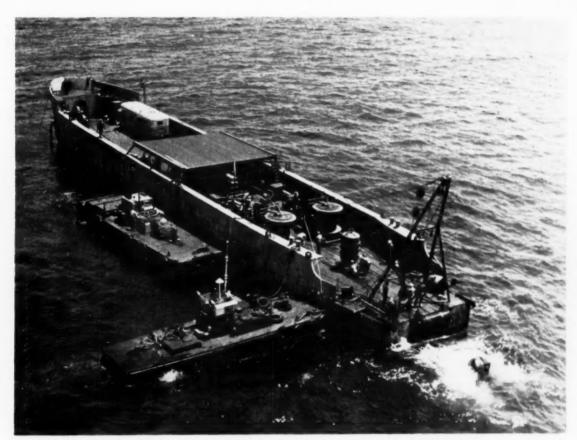
Key to the operation was a unique pulling barge made from a converted LSM. It mounted a powerful winch that could exert more than 1,000,000 lb of pull, yet the barge itself absorbed none of the force. Instead, the huge force was transmitted to a pair of lines running back from the hoist to a mammoth anchor, buried 9 mi at sea in 600 ft of water.

In other words, the barge served primarily as vertical support for the winch. Without the huge lines anchored 9 mi at sea, the tremendous horizontal forces would have been impossible to absorb with conventional mooring lines. Any failure in one of the mooring lines easily would have tipped over the barge.

Collins' anchoring system was expensive and elaborate, but it could meet all conditions, provided a substantial safety factor, and even more important—assured the success of a venture which may mark the beginning of a revolution in subaqueous pipeline methods.

Basic Method

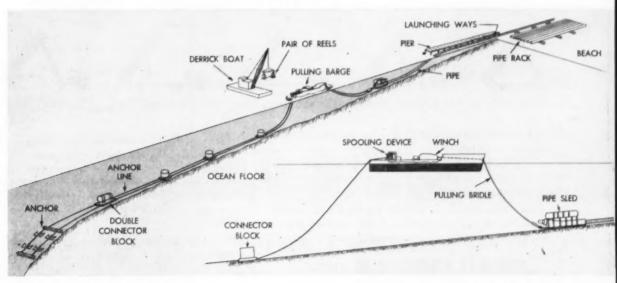
Here's how the job was done. When the anchor was placed, the LSM headed for shore, reeling out lines from a pair of spooling devices. Near the beach, the unreeling was discontinued, and a loop from the double-drum winch was unreeled and pulled to shore. Here it was looped around a



PULLING BARGE with heliport is made from converted LSM. It carries main winch, yet absorbs no pulling force. Instead, winch

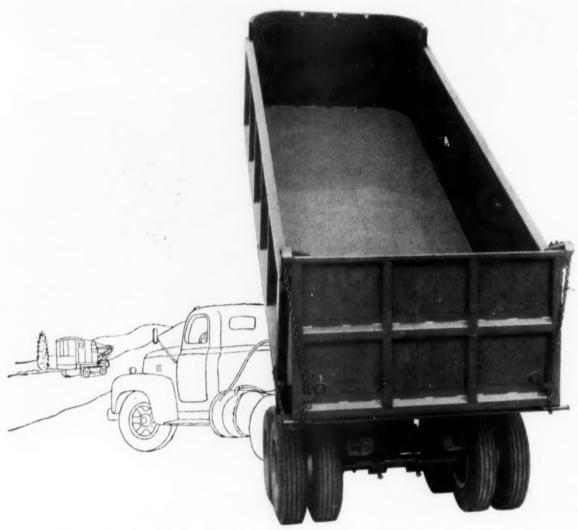
pulls against long anchor lines, here being laid preparatory to pipe pulling. Lines are anchored 9 mi at sea.

7 Mi in Only 7 Days



SIMPLIFIED SKETCH of barge and pipe sled just after one of the 1,200-ft pulls. Barge backs up, unreeling pulling bridle from for-

ward winch and reeling in anchor lines on stern spooling devices. Derrick removes pair of full reels.



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PACIFIC OUTFALL . . . continued from page 141

sheave tied to a sled at the forward end of the pipe. Resisted by the two anchor lines in the rear. the winch pulled about 1,200 ft of pipeline into the surf. At this point, pulling was interrupted while another 1,200 ft of pipe was added on shore. And at the same time, the pulling barge backed up 1,200 ft into the ocean by coiling in the anchor lines. When this was completed, the winch made another 1,200-ft pull of pipe, and the procedure was repeated. After 30 or more pulls, the pipeline reached its destination, and was practically ready to go to work.

Despite some rough seas, the job went off without a hitch. It was done entirely from the surface of the ocean, eliminating the hazards of deep-sea diving and cutting installation to an amaz-

ingly low 71/2 days.

Virtually everything about the job is unique. Engineered to discharge digested sludge, the outfall is designed to last 100 years. This is accomplished by lining the 3/8in. thick steel walls with spun mortar coated with a combination of glass fiber, enamel, and mortar.

The coating consists of three layers of coal-tar enamel placed over a primer coat. Between layers of enamel are wrappings of glass fiber placed on while the enamel was hot. Covering this is a wrapping of asbestos coal-tar saturated felt. To protect this coating against abrasion during and after placing, a 11/8-in. layer of reinforced mortar was applied pneumatically. Reinforcing was 2x4-in., 12-gage crimped wire mesh. The 1/2-in. thick inside mortar lining was applied centrifugally with a 1/8-in. tolerance.

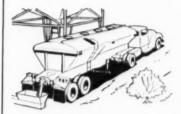
Pipe was furnished in 40-ft lengths by Consolidated Western Steel Corp., which also did the coating and lining. Wrapping was handled by Pacific Pipeline Construction Co., and cement mortar coating and lining was by United

Concrete Pipe Co.

Considerable preparatory work had to be completed before actual pulling. Because of the heavy surf, a timber pier was built 1,000 ft into the sea with a pile-supported low-level launching way running the full length alongside. On the beach, a rack was built to assemble 600-ft lengths of pipe and feed them to the launching way.

continued on next page

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TRAILMOBILE CEMENT BULKERS

transport large amounts of bulk cement to mixing plants at the job site. Both steel and aluminum types offer exclusive step-down design with twin screw discharge.



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TRAILMOBILE PLATFORM TRAILERS

. are used for carrying lumber, cement forms, drainage tile, straw bales and sundry light equipment. "Sideless feature" permits simpler, faster loading and unloading.



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TRAILMOBILE LOW BEDS

are used to deliver heavy road building equipment to the job area. Steel shovels, bull dozers and other large tractor-treaded units can be easily transported on these powerfully built trailers.

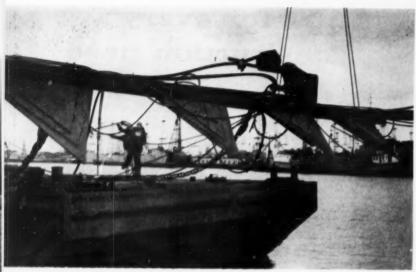


TRAILMOBILE FREIGHT VANS

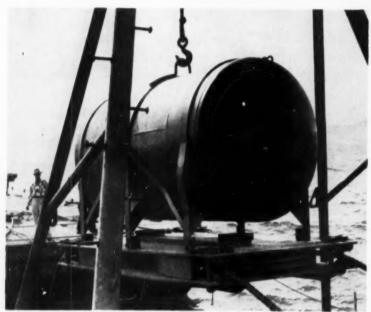
combine weather protection and mobility for hauling general supplies. Low cost used vans provide ideal job site offices, tool shops or storage facilities

TRAILMOBILE INC.

Cincinnati 9, Ohio, Berkeley 10, Calif., Springfield, Mo., Longview, Texas Sales and Service from Coast to Coast



STEEL-FRAME SECTION of 160,000-lb anchor mounting triangular flukes is lowered on to scow where it is joined to other sections before towing 9 mi to sea.



DOUBLE BLOCKS equipped with pontoon connect anchor bridle with first section of anchor line. Complete anchor assembly is draped over ocean floor at 600-ft depth.

Massive Anchor Takes 1,000,000-lb Pull

Meanwhile, a massive anchor assembly weighing 160,000 lb was towed to sea and placed. Designed to resist a pull of 1,000,000 lb, it was laid carefully on the

sloping ocean floor 600 ft below water.

The anchor consisted of two long fabricated steel frames laid parallel to the beach 120 ft apart, tied together by two lines of chains and Danforth 14,000-lb anchors. Each frame was made of 30-in I-beams 42 ft long, fitted with four heavily reinforced steel points, or flukes, projecting 5 ft into the ocean floor at a sharp angle.

At the seaward end of the anchor, two 1¼-in. cable pennants 1,000 ft long were buoyed off for retrieving the anchor assembly after job completion.

Pontoon Lightens Blocks

From the forward ends of the anchor, a bridle of 2-in. wire rope provided the connection with the long anchor lines that would transmit the huge pulling loads. To equalize the stress in both legs of the bridle, a pair of tandem pontoon-equipped blocks were employed. The bridle passed around the seaward block, and the looped anchor line was reeved around the forward block. In this way, regardless of movement, the loads on the lines were equalized.

This entire anchor assembly, with most of the first anchor line still on two reels, was towed out 9 mi to be laid in place. It was a tough problem. The completely reeved anchor had to be lowered intact, yet it was too heavy for cranes to handle in the air. Besides, it simply could not be dropped; the assembly had to be stretched out in the proper alignment to assure that all sections would act together to resist the huge pulling load.

Derrick Boat Helps

Collins hauled most of the assembly on a barge. At the proper point, a derrick boat hoisted the rear frame as other sections were released from the side of the barge. Eventually, most of the assembly was underwater, held at one end by the derrick and at the other end by pulling barge.

The asssembly was lowered until the rear frame made contact with the ocean floor. Then the pulling barge winched itself forward, stretching the anchor assembly and draping it over the sloping floor. With the anchor in place, the barge was ready to head for shore, unreeling its anchor rope from the stern as it went.

continued on page 148



"SHEAR-BALL" TURNTABLE MOUNTING*

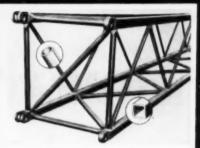
Turntable is secured to crawler and revolves easily and freely on a huge sealed "ball bearing." No center pin or nut, centering gudgeon or exposed roller path . . . no turntable rollers . . no constant adjustment, maintenance or lubrication problems.

*U.S. and foreign patents applied for.



2-LEVER, "JOY-STICK" AIR CONTROLS

The newest and most effortless of all shovelcrane power controls. "Metered Air" feeds power to clutches at any rate desired — yet operator retains full "feel" of all operations. Fewer levers, fewer motions, faster, smoother, less effort, less fatigue, more output.



SQUARE-TUBULAR-CHORD BOOM*

This new patent-applied-for design has startling advantages over conventional types. Reduces weight and increases lifting capacities. 30-ton crane capacity on 14-ft. long x 13-ft, wide crawlers . . . up to 100-ft. boom, plus tip extensions available.

In the LORAIN-56 too the B G 3

the **BIG 3** make money for you!

MANUFACTURERS OF POWER SHOVELS, CRANES, CLAMSHELLS, DRAGLINES AND HOES—ON CRAWLERS, RUBBER-TIRE MOTO-CRANES OR SELF-PROPELLED CARRIERS— EXCAVATORS, 3/6 to 21/2, YDS.—CRANES, 7 to 75 TONS

LORAIN.

Just like the big 2½-yd. Lorain-85Å, the fully convertible 1¼-yd. Lorain-56 gives you the 3 big Lorain features that will mean more profits on any job. You get greater operating ease, longer life, higher production, reduced maintenance... plus increased crane capacities with these "Big 3" features.

There are many other "56" advantages, too, that make it an exceptional value in the 1½-yd. class. Here are a few: full air control of crawler operations...hoist and swing drums and travel shaft on anti-friction bearings...torque converter power-take-off...choice of two crawlers...crane capacities up to 30 tons available...a new, interchangeable hoe with dipper widths from 36" to 48"...and there are many more.

We would like you to know all about the Lorain-56. Why not see your nearby Lorain Distributor now—or write direct for the information you need.

THE THEW SHOVEL CO., LORAIN, OHIO

How the Du Pont Antisave you work,



1. Pick the best!

Photograph above shows why your costly equipment is safest when you winterize with Du Pont Zerone[®] or Zerex[®] anti-freeze.

Flask "A" contains a solution of ordinary anti-freeze with an oil inhibitor. Flask "B" contains a solution of "Zerex" with Du Pont's exclusive chemical inhibitor. To each was added the same amount of ground rust. Flasks were shaken and contents poured. Notice how film of rust clings to the inside of Flask "A" just as it would to cooling system. But Flask "B" with "Zerex" is clean—rust particles stayed in suspension—drained out with the solution. Du Pont's chemical inhibitor will never form an oily film of rusty sludge that could clog radiators, causing overheating and serious engine damage.

This is just one of the many advantages you get when you protect your equipment from freezeups, rust and corrosion with either "Zerone" or
"Zerex" anti-freeze. Pick the Du Pont anti-freeze
best suited to your needs and you have taken the
first step in the anti-freeze preventive maintenance
plan — that will save you work, time and money.



2. Pre-mix your anti-freeze

Both "Zerone" and "Zerex" will mix completely in water, and the rust inhibitor will not separate from the solution while standing. This permits you to pre-mix your anti-freeze solution to any degree of protection desired for use when and where you need it.

Stock your pre-mixed anti-freeze in any convenient place. It will keep indefinitely — always ready to use.

When anti-freeze is pre-mixed, installations can be made rapidly by unskilled help and without the need for individual time-consuming hydrometer checks. What's more, guesswork and the chance of costly overprotection are avoided — and pilferage problems are discouraged.

Take advantage of the total savings possible when you pre-mix with Du Pont "Zerone" or "Zerex" — the quality anti-freezes that can be pre-mixed with water to stay!

Freeze PM Plan can time and money!



3. Use the "Zerex" Test Kit

Thousands of dollars' worth of equipment is ruined each year because winter-worn anti-freeze is left in the cooling system to turn acid and cause rust and corrosion.

Now for the first time Du Pont makes it possible for you to tell — right on the job — which "Zerex" anti-freeze solutions are safe to re-use and which are worn out and should be replaced with a fresh "Zerex" solution. In this way, you can reduce cooling system maintenance expense and cut your "Zerex" anti-freeze costs in half!

And remember, only "Zerex" anti-freeze can be safely analyzed — on the job — with the exclusive "Zerex" Anti-Freeze Test Kit. This new method for testing reserve alkalinity in "Zerex" anti-freeze is a development of Du Pont research. It helps make possible an anti-freeze preventive maintenance plan that will save you anti-freeze and cut your operating costs.



Your best anti-freeze buy!

Note to maintenance supervisors and antifreeze buyers: When you consider the value of the equipment you use, the investment your anti-freeze mustprotect and the expense of needless downtime, an efficient anti-freeze preventive maintenance plan makes good business sense.

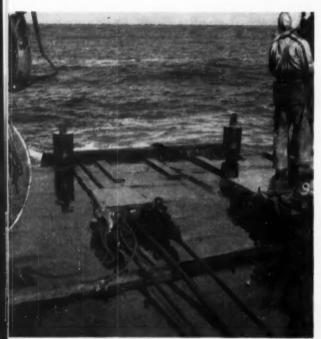
The continuing savings made possible with "Zerone" and "Zerex" and an Anti-Freeze PM Plan far outweigh any momentary saving you might gain by using anti-freeze products of questionable performance and low initial cost.

Contact your Du Pont anti-freeze supplier or mail the coupon today — start saving now with the Du Pont Anti-Freeze PM Plan.

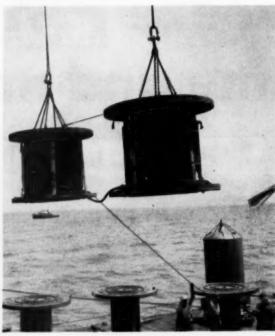


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CARPENTER STOPS tied back to frame of pulling winch lock anchor lines at stern of barge while reels are changed.



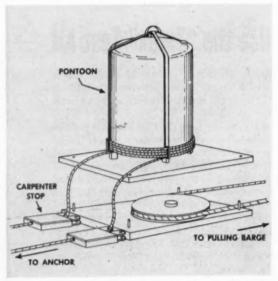
PAIR OF REELS with line passing between is swung on to barge by derrick boat. Special chain-lifts tie into reel.

PACIFIC OUTFALL . . . continued from page 144

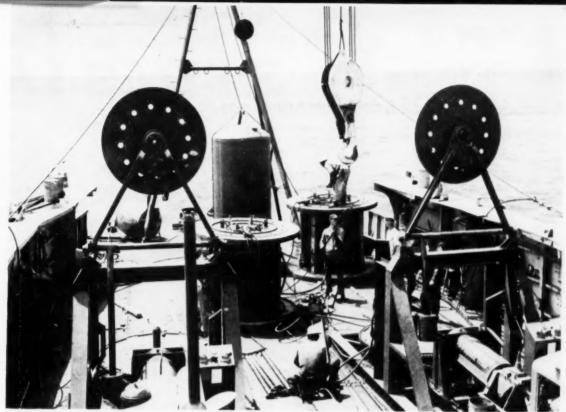
Spooling Devices Lay 9-Mi Anchor Line



CONNECTOR BLOCK with pontoon on top joins loop end of one line with two free ends of another, equalizing line loads.



LOOP of one line is passed around sheave while ends of adjoining line are locked in attached carpenter stops.



CIRCULAR COVERS for reels are held upright by conterweights to permit reels to be placed on chain-driven turntables. Covers

then are turned down and rods are dropped through holes in reel and screwed into turntable to lock reels in place.

Key to fast, simple unreeling was the method of splicing the anchor lines. Although it appeared to be a pair, the anchor line actually was a series of 10 long loops. Each loop was carried on two reels, half on one and half on the other, with the line passing from one reel to the other so that it unreeled as a loop. A splice, therefore, had to connect the loop end of one line with two free ends of the adjoining line.

Frames Hold Reels

Here's how it was done. The two reels, positioned in special frames at the stern of the barge, unreeled simultaneously as the barge winched itself ahead. Transitmen on shore kept the barge on line by two-way radio.

When only a few feet of line was left on each reel, the barge anchored itself, and the two lines were locked at the stern in special carpenter stops tied back to the main winch. The remaining line then was uncoiled from each reel and laid to one side on deck.

The empty reels were unlocked from their holding frames, and a derrick boat hoisted them simultaneously with a lifting beam and chain pickups. Two full reels then were hoisted aboard to replace the empties.

Because of the tremendous forces involved, ordinary unreeling methods were ruled out. Reels had to be built so that they could be anchored solidly in heavy frames to control spooling.

In position, each reel was supported underneath and also rotated by a turntable, driven by a roller chain powered by a General Motors 165-hp diesel engine. It was held in position by six heavy steel rods inserted through hinged steel cover plates on top of the reel. These rods were screwed into the turntable, locking the reel to the frame.

When both reels were set up, the splice was ready to be made between the single loop from the two reels and the two loose ends that were laid previously on deck. Here again, a pontoon-equipped connector block did the job.

Sheave Takes Loop

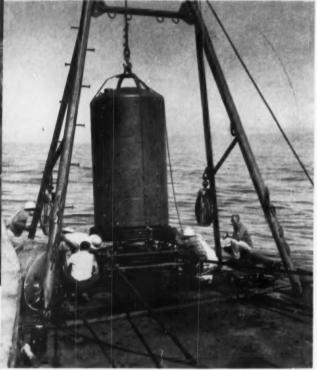
The first operation was to raise the pontoon part of the unit with built-in screw jacks. When raised the proper height, the pontoon exposed a huge horizontal sheave in the block, around which the loop of new anchor line was easily wrapped. Then the pontoon section was lowered and bolted again to the block.

continued on next page



BUILT-IN screw jacks raise pontoon to permit loop to be passed around sheave.

Pontoon Blocks Connect Anchor Lines



A-FRAME on barge helps maneuver connector block over stern. Pontoon keeps unit upright, helps avoid danger of entanglement.



PULLING BARGE winches itself toward shore as connector block sinks out of sight, carrying new loop of anchor line.



SPOOLING DEVICES powered by General Motors diesel engines pay out loop of anchor line while radar antenna scans horizon to spot boats and locate weather forms.

This took care of the loop; the next problem was locking the two free ends of the preceding line to the block. This was easy. Attached to each block, and in the same plane as the sheave, was a pair of Collins' special carpenter stops. Each line end was passed through a stop, locked there, and excess coiled base pontoon.

Thus the loop of one line was spliced to the free ends of another without any actual contact. And because the center of gravity was near the base of the block, the unit would remain upright in the water, eliminating entanglement.

When the splice was completed, an A-frame hooked into the top of the pontoon and moved it to the stern, causing line to uncoil from the two reels. The connector block was lowered into the sea as the pulling barge winched itself ahead. This procedure was repeated nine times until about 9 mi of line was laid. As the line approached shore, it was graduated down from 2-in. to 1¼-in.

continued on page 154

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ALEMITE on-the-job

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OFFERS 3 BIG SAVINGS!

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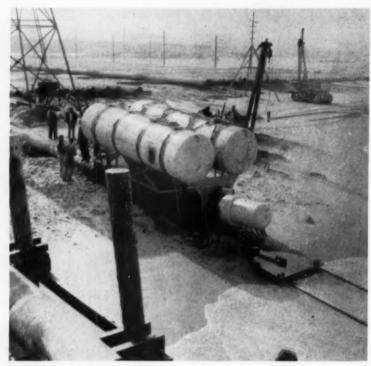
ALLIS-CHALMERS

Engineering in Action





PULLING BARGE prepares to pull first string. Others will follow off launchway.



BLOCK at front of sled houses 5-ft dia sheave. Sled grips nose of pipe by means of concrete casing. Plug sealing end of pipe is blown out after pulling.

PACIFIC OUTFALL . . . continued

Sled Leads Pipeline into Ocean as

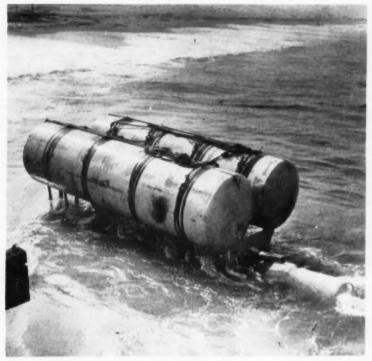


RACK FEEDS strings of 600-ft pipes to launchway at left. Pipes are rolled easily by cable and winch. Control tower is nerve center.



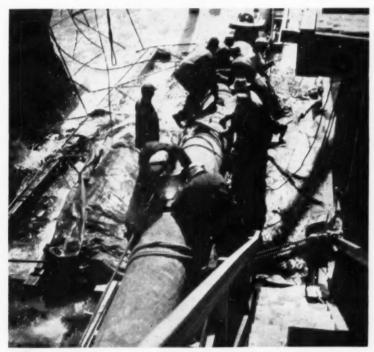
PIPES rolled to skids are lowered by jacks on to launchway, hauled forward by tractors riding pier.

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PAIR OF PONTOONS 5 ft in dia and 18 ft long help sled assembly achieve negative buoyancy of 500 lb. Releasing system frees pontoons when pulling is completed.

Long Strings are Added



WELDERS join two strings of pipe near forward end of rubber-tired launchway. Tarps are spread underneath to bar splash from surging surf. All welds are X-rayed.

When the pulling barge had completed laying of the anchor line and was near shore, a loop of 2-in. line was unreeled from the barge's powerful two-drum winch. One end was dead-ended on each drum. About 8,500 ft of line was pulled out, forming a bridle 4,250 ft long. On shore, the loop of the bridle was placed around a 5-ft dia sheave block on a sled at the nose of the pipe.

The pulling-sled design was governed by strict specifications. Hyperion engineers demanded that no steel in contact with sea water could be welded to the pipe. And they also required that the pipe nose be held 3 ft off bottom.

Besides, the sled had two other purposes. It housed a removable plug assembly at the end of the pipe. And after pulling was completed, it served as end anchor.

To meet these conditions, Collins built a 62,000-lb sled designed to transmit the pulling load through a concrete casing around the pipe. He first welded steel fins around the outside of the pipe, then poured concrete on top. Thus the pull was absorbed by the concrete's compression strength and transferred to the pipe through the fins.

Two steel pontoons, 5 ft dia by 19 ft long, with a total lifting capacity of 40,000 lb were tied to the sled with multiple wrapped bands attached to a patented pontoon releasing mechanism so that the floats could be released after the pipeline was in place. These two pontoons, together with the displacement of the sled proper, left the assembly with a negative buoyancy of about 500 lb.

The pulling sled was carried down to the water's edge by tractors and welded onto the seaward end of the first 1,200-ft pipe string. The pulling barge towed this section into the water until the shoreward end of the first string was adjacent to the seaward end of the second string. After the first two strings were welded, a clamp was bolted onto the second string with cables reaching back to a holdback winch on the beach. As the second string was pulled beyond the launching pier, it was moved gradually over onto the center line. The holdback winch then pulled both strings in the sled backward until the shoreward end of the second string was at one of the welding stations on the 800 ft launching pier.

continued on page 157



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Complete Line of Homelite Carryable Construction Equipment Now Available



Self-Priming Centrifugal Pumps . . . Carry these lightweight, dependable pumps anywhere. Non-clogging design . . . 28 foot suction lift . . . capacities up to 15,000 g.p.h. . . . sizes from $1\frac{1}{2}$ " to 3". Diaphragm pump also available.



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PACIFIC OUTFALL . . .

The holdback winch had another important function. During subsequent pulls, it kept the pipe in tension and prevented it from running out should failure occur at some point. The holdback winch worked through two sets of clamps so that one set was always in position on a section of pipe at the time the other was being moved into position.

A launching way situated on one side of the 800-ft pier was equipped with patented rubbertired self-centering units. At the end of the pier these were positioned on a vertical curve with a minimum radius of 4,000 ft that allowed the pipe to enter the water at sea level. At this point the sea bottom was 20 ft deep. The pipeline as it was pulled out to sea reached the floor at a point some 600 ft seaward from the last launching unit and described a gentle reverse curve with minimum radius of 5,600 ft.

The 600-ft strings of pipe were racked on 12x12 timber skids parallel and immediately adjacent to the beach portion of the launchway. Each string was rolled to the end of the rack where hinged timber skids were supported by hydraulic jacks. Here, the pipe string rolled to a halt and was lowered on to the rubber-tired launching units. All jacks were manifolded into a common hydraulic system to lower the skids simultaneously and set the pipe gently and quickly.

The pipe string then was moved by side boom tractors riding on the pier until its seaward end was at No. 1 welding station, 250 ft from the end of the pier. A second string was moved onto the launching units and placed at No. 2 welding position, 50 ft down the launchway. By this method it was possible to make the two tie-in welds almost simultaneously and pull double strings, or 1,200 ft, at a time.

Although the specifications required an inside mortar lining at the tie-in welds, the contractors believed that this would slow down the procedure due to the necessity of putting a man inside the pipe to place the mortar lining. Solution to this problem was a pre-molded plastic ring of epoxy resin to fit inside the pipe. It took from 2 to 4 hr to position, weld, X-ray, and coat the joints. continued on next page

New..

Sterling E-Z Dump Cart

Saves Time Saves Energy Saves Money

• Here's a new concrete cart with 9 cubic foot (water level) capacity . . . perfectly balanced and exceptionally easy to handle. Operator merely pushes tray forward to let concrete pour out. Unique Sterling designed undercarriage enables wheels to remain on wheeling surface while cart contents are being discharged. One man can haul and unload more concrete per day than is possible with any other cart of equal capacity.



Sterling E-Z Dump Cart has big diameter, pneumatic-tired wheels equipped with Timken Roller Bearings for easy wheeling. Tray is made of 12 gauge steel reinforced on top edge. Special heavy duty axle is hinged to bottom of tray. Write for Catalog.

STERLING WHEELBARROW COMPANY

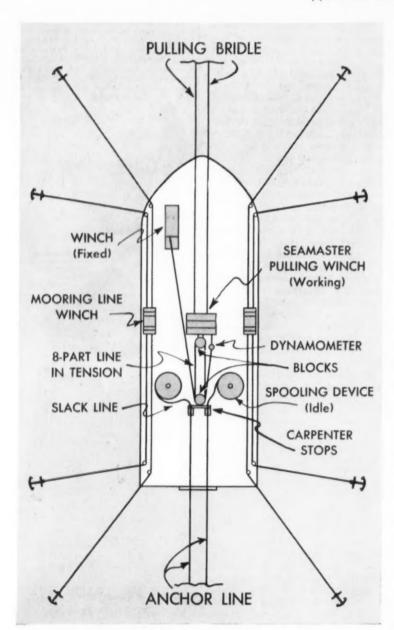
MILWAUKEE 14, WISCONSIN, U. S. A.

PACIFIC OUTFALL . . . continued

Powerful Winch Pulls 7-Mi Pipeline



HELICOPTER waits on heliport as Seamaster winch tugs at long pipeline. Note 4-drum mooring-line winch on each side.



CABLE ARRANGEMENT transmits pulling force to 8-part line, through carpenter stops, and into anchor lines. Spooling devices are idle during pull. Anchors align barge.

Key to the entire pulling operation was the powerful bargemounted winch. Known as the Seamaster, it was powered by a General Motors 315-hp diesel engine through a torque converter. Its double-drum unit was capable of a single line pull of 660,000 lb at 25 fpm. Pulling on its line, or loop, this machine could exert a pull of 1,320,000 lb, although only a fraction of this capacity was required. The winch had a self-contained air compressor to supply the air control system.

Once the first strings of pipe were moved on to the launching ways, the tempo of the pulling operation increased quickly. Tied back to the long anchor lines, the big winch easily pulled the line in 1,200-ft increments.

Naturally, the largest force was required at the beginning of each pull to get the line moving. But because of the exact pre-determined application of cement lining, the pipe's negative buoyancy was held at only 4 lb per linear ft, and the pulling went easily. This 4-lb negative buoyancy is unusually low for underwater pipe laying, but absence of strong cross currents made it possible.

Collins experienced some difficulty with high pulling loads in the shallow water, primarily because the pulling bridle would build up excessive friction as it burrowed through the sandy bottom. But by shortening the length of bridle this was quickly overcome. Later, in deep water, where the bridle hung mostly in water instead of on sand, the length of bridle was increased. Maximum pull was 250,000 lb.

During actual pulling, a second set of carpenter stops came into play. Their prime purpose was to transmit the pulling load from the winch to the anchor lines. This

continued on page 163

More digging power with a **PAYLOADER**°

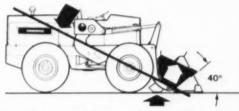


40° bucket roll-back <u>at ground level</u> plus powerful pry-out digging action

In EL PASO, TEXAS — preparing 7,775 feet of sub-grade for a new, heavier roadway, Vowell Material Co. use their two "PAY-LOADER" Models HO and HH to tear-up and truck-load the old pavement. Each loader keeps 2 and 3 trucks busy besides leveling the areas.

It takes *real digging power* to break-up and pry-out the 10-inch-thick concrete slabs . . . something like the exclusive *bucket action* on a "PAYLOADER" that combines powerful pry-out force with 40° bucket tip-back at ground level.

Add this superior digging power to the other outstanding performance features found in the new "PAYLOADER" models — hydraulic load-shock-absorber . . . power-transfer differentials . . . "no-stop" power-shift transmission . . . planetary final drives . . . power-steering and 4-wheel power brakes — and you'll know why a "PAYLOADER" digs-in and out-produces any wheeled tractor-shovel of comparable size. Your "PAYLOADER" Distributor is ready to prove this performance by having you try one on your work. Call him today.



Tremendous pry-out force — almost equal to the weight of the machine — can be exerted at the bucket digging edge by using the break-out pads on the bottom of the lifting arms as a ground support or fulcrum.

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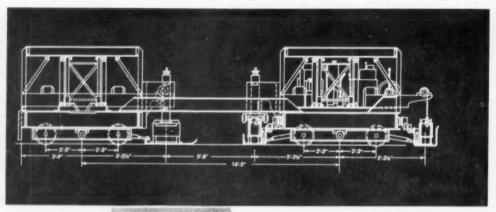


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First Again
with Faster — Finer — Finishing Combination

"FLEX-PLANE" Combination Machine gives greater compaction and applies superior finish to Connecticut Turnpike.



WORLD'S LARGEST BUILDER OF CONCRETE FINISHING EQUIPMENT

U.S. ROUTE 16-near Farmington, Michigan, Loselle Construction's Combination increases daily finishing average.



"...4400 feet of 22-foot pavement finished in one day."... "keeps up with three dual drum pavers."... "450 lineal feet of 24' pavement per hour." These are typical reports from contractors using the revolutionary new Flex-Plane Combination Finisher-Float Machine which does the combined jobs of transverse and longitudinal finishers. On the average, users finish over 3000 feet of pavement a day, requiring only two or three hand finishers depending on type of joints being used.

On-the-job checks show longitudinal surface smoothness to be unsurpassed by any other equipment regardless of condition of forms. Results prove it to be the fastest, most efficient finishing machine in use today.

But why not get all the facts? Write today for your copy of the data-packed "Flex-Plane Finisher-Float Machine" brochure. See for yourself why contractors consider it the finest machine of its type in the world.

U. S. ROUTE 30 — J. A. Jones Construction Company uses combination on straightaway paving — Flexplane self-widener on interchanges near Mansfield, Ohio.

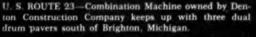


CONNECTICUT TURNPIKE—DeLillo Construction Company's Combination cuts hand finishing to a minimum.



36

U. S. ROUTE 12—Kalamazoo, Mich., bypass is worked by Carl Goodwin & Sons, Contractors generally report substantial savings over previous finishing methods.







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STRAIGHT LINE HORIZONTAL THRUST . . . allows constant crowding of pile while maintaining full traction and steerage.

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FASTER TIME CYCLE . . . is the natural result of these features. Faster work means greater job profits!



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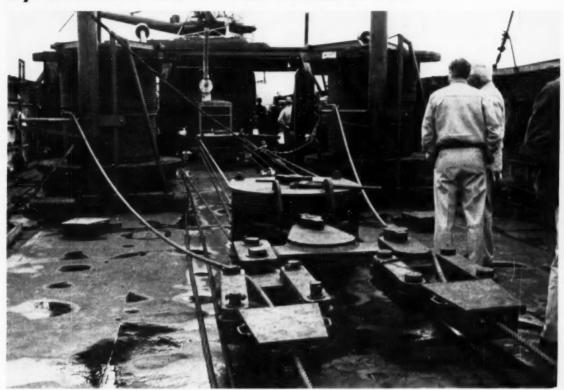
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Dynamometer in 8-Part Line Measures Pull



PAIR of carpenter stops attached to block of 8-part line transmit pulling force to anchor lines. After each pull, stops are unlocked

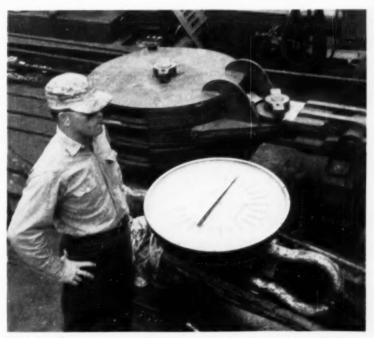
so that spools can reel in anchor line as barge backs up. Vertical cylinders at reels are air-operated level-wind device.

they did through a pair of huge blocks and an 8-part line of 11/4in. rope dead-ended at one end to the winch and connected at the other end to another winch.

The main purpose of the 8-part line was to break down the huge pulling load so that one of the ropes could accommodate a dynamometer. According to Collins, this was necessary because accurate dynamometers read only up to 100,000 lb. Tied to its own winch, the 8-part line also permitted some movement of the carpenter stops on deck, which was necessary at times during reel replacing.

At the end of each 1,200-ft pull, the barge backed up by spooling in on its anchor lines. And it simply was a reverse of the line-laying operation. The first set of carpenter stops, tied directly to the winch frame, held the pair of anchor lines at the stern while full reels were removed and replaced with empties.

continued on next page



DYNAMOMETER with capacity of 100,000 lb works in dead-ended part of 8-part line to provide accurate measure of pulling load. Other end is tied to separate winch.



CONTROL TOWER at launchway is heart of 15-station radio net. As precaution, tower also mounts system of visual signals.



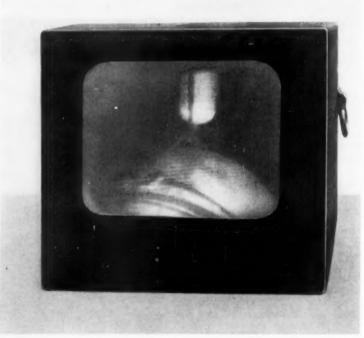
UNDERWATER pipeline specialist Sammy Collins clutches radio transmitter in control tower while observing launching.

Radio and TV Coordinate Pulling Operation

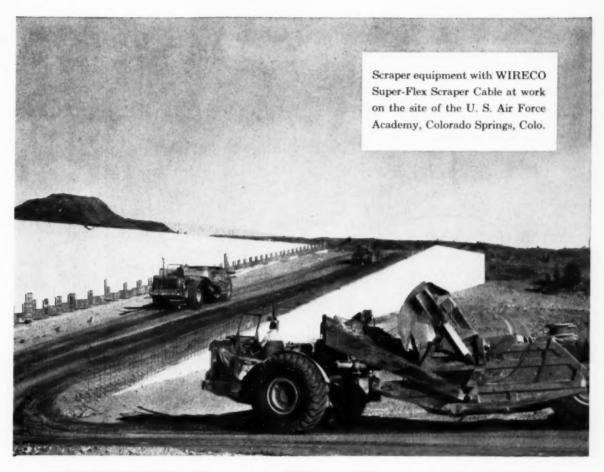
The actual pipe-pulling operation took place during a 7-day, 11-hr, 30-min continuous period in late May. The operation was radio controlled from a tower erected on the beach. Fifteen radio positions were used with units located at the control tower, both welding stations, pulling winch, pulling barge deck, hold back winch, main office, X-ray trailer, and assorted boats. However, in case of radio failure, visual signals were positioned on the control tower. A red signal meant to stop pulling, and green meant to start.

Also part of the job communications system was a Hiller helicopter that carried personnel and small cargo loads between the beach and the pulling barge. A landing platform for the whirley-bird was mounted on the barge just over the big winch. The helicopter was on the job at all times that the barge was in operation, including the preliminary stages of placing anchor line. It could carry two passengers in addition to the pilot. However, workers were hauled in launches.

continued on page 167



TV RECEIVER stationed on barge shows picture of pontoon releasing mechanism. Remotely controlled TV camera allowed engineers to inspect pipe at 300-ft depth.



WIRECO Super-Flex Scraper Cable Is the Answer to Longer, Better Service Life!

On the Job Comparison Proved WIRECO More than 100% Better!

Excavating and grading for the new Air Force Academy was a big undertaking and demanded the finest equipment available. To get maximum performance from the equipment used, several different scraper cables were used to find the one with the longest and best service life. WIRECO Super-Flex Scraper Cable was the answer to this rope problem. This new product proved itself to be more than 100% better than others used. Whatever the problem in the construction field, WIRECO has the answer. Consult your WIRECO Distributor for complete details of this amazing 'est and all wire rope needs.

WIRECO Super-Flex is better because of its FLEXIBILITY and ABRASION RESISTANCE

The special construction of Wireco Super-Flex Scraper Cable combines these two characteristics in a rope that thrives on rough going . . . insures more yardage and greater profit!



SAFETY ENGINEERED

to the demands of your job! Comes wound on scraper reels ready for fast, easy mounting, yet costs no more!

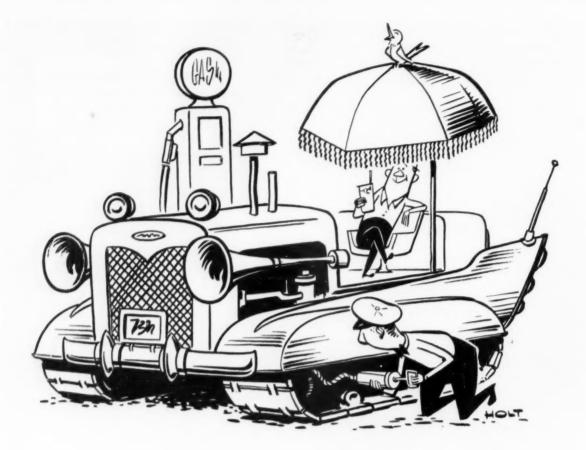
See your WIRECO Distributor TODAY!

WIRE ROPE CORPORATION OF AMERICA



St. Joseph, Mo.

Phone 3-0287



Why use automobile grease in heavy-duty equipment?

Let's not kid ourselves about the difference between the lubrication requirements of automobiles and heavy-duty machinery. D-A Lubricants are compounded specifically for heavy-duty equipment. There is a right one for every application.

For example, D-A Track Roller Lubricant • D-A Winter Track Roller Lubricant • D-A Open Gear • D-A Torque Fluid • D-A Lithium, Extra-Heavy • D-A Transmission Lubricants • D-A Gun Greases.

Let your D-A Representative give you all the facts on how D-A Lubricants can reduce parts wear and minimize downtime . . . increase the return on your equipment investment.

D-A Lubricants make equipment last longer





D-A LUBRICANT COMPANY, INC. • Indianapolis 23, Indiana

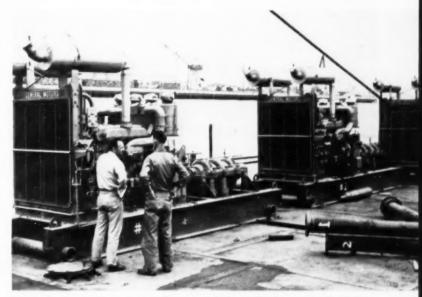


TRAVELING TRENCHER straddles pipe near shore as its water jets cut and flush out surrounding sand. Air jets swirl fluid up and away.

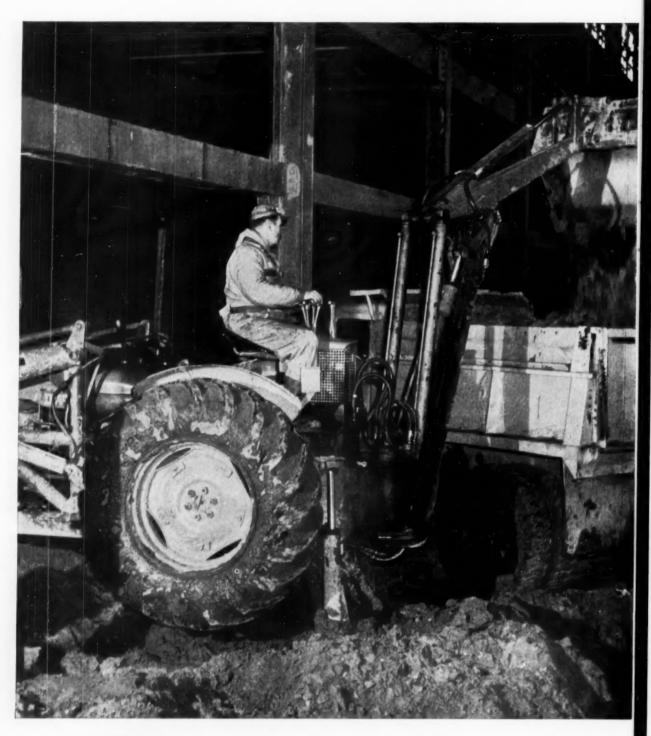
Both air and water are fed to nozzles through piping on frame itself. Rig makes several passes over pipe to bury it.

Jetting Device Sinks Pipeline into Trench

During pulling operations, the end of the pipe was sealed with a tapered plug having an "O" ring seal. The plug was held in place with a buoyant cap secured by a hook hinge on top and a bolt on the bottom. The bolt was calibrated to break at 150 psi which is in excess of the required 130 psi hydrostatic test. In this way, the test was made, and then the pressure was run up to break the bolt. The assembly floated to the surface by virtue of the buoyant cap. This latter part of the procedure worked well. But the plug seal leaked some 7 gpm so the hydrostatic test couldn't be made. As a result, the final method of testing was by blowing out the end plug and filling the pipe with air-using the air as the test medium. This was possible as sea water pressure at the pipe end was in excess of 130-psi so the continued on page 170



WATER for trencher is supplied by three General Motors diesel-powered Allis-Chalmers pumps manifolded to furnish 6,000 gpm at 500 asi. Two 600-cfm compressors supply air.





You see more FORDS



Flint, Mich., Job Report:

Fordson Major Diesel works 'Low and Inside' for 75¢ a day!

FLINT EXCAVATING COMPANY of Flint, Michigan, contracts over a half-million dollars of work a year digging footings, trenches, basements, parking lots, etc., and doing small-road building. The company has been using Ford Tractors and Equipment for four years, and is especially sold on the powerful Fordson Major Diesel.

MR. H. P. PACE, one of three partners in the company, says: "We've always been pleased with FMD fuel and maintenance economy, and we find for our work it has plenty of power, and more. But one of the biggest things it offers us is a compact, maneuverable source of power for inside digging and loading."

VETERAN OPERATOR BERT DEKALB, JR. says: "I do a bit of everything with it. Dig footings. Dig pits for machinery. Pull concrete trucks out of the mud. All kinds of loading and backfilling. I can dig, set and backfill a 3000-gallon tank in 4 or 5 hours."

FUEL CONSUMPTION? "Five gallons of No. 2 diesel fuel see me through an 8-hour day," says Mr. DeKalb. "At 15 cents a gallon, that's operating for practically nothing!"

FORD TRACTORS AND EQUIPMENT are helping to make happy operators and prosperous owners on all kinds of construction jobs all over the country. Get the *full* Ford story today from your nearby dealer, or write to: Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan.

because they save more money!

PACIFIC OUTFALL . . . continued from page 167

air pressure in the pipe could be raised to the required 130 psi.

Some 6,000 ft of the shore end of the pipeline was lowered or trenched into the ocean bottom. Cover ranged from 4 ft on the offshore end of this section to 15 ft in the breaker area at the beach. A patented submarine pipeline trencher straddled the pipe as it rested on the ocean floor. High pressure streams of water and air were pumped through a series of

jet nozzles. The air and water were fed into the machine by a series of manifolds connected by a high pressure flexible hose to a series of pumps and compressors on an attendant barge. As the trencher moved along the pipe, the bottom material was cut away allowing the pipe to settle into the ditch.

Pipe nearest the shore, however, had to be buried inside sheet piling because the surf filled up the excavation too rapidly.

Seaward from the buried part of the pipe, a series of 29 anchors spaced at 500 ft intervals were placed over the pipe. Each of these anchors consisted of two 4x3½x2½-ft concrete blocks connected by 14½ ft of chain with 3½ ft of each end embedded in a block.

Personnel

The Hyperion sludge line is a project of the City of Los Angeles Board of Public Works under the direction of Rear Adm. Cushing Phillips, CEC USN (ret), president of the board. Representing the city in charge of the job was W. T. Anderson, inspector of public works, and Ben O. Badgley, chief surveyor for the Bureau of Engineering.

The work was designed by Hyperion Engineers, a joint venture of Holmes & Naver, Inc.; Daniel, Mann, Johnson & Mendenhall; and Koebig & Koebig. For Hyperion Engineers David L. Narver, Jr., is project manager; E. H. Graham, Jr., is assistant project manager, and D. R. Miller and R. R. Alvy are project engineers.

The construction was handled by a joint venture including Healy-Tibbitts Construction Co. of San Francisco, Submarine Pipeline Construction Co., Inc., of Port Lavaca, Tex., and DeLong Corp. of New York. Robert Helen is project manager for the joint venture and Jarvis Gates is office engineer.

The makeup and installation of the pipeline was handled by Collins Construction Co. personnel with specialized equipment and procedures whose patent rights are held by S. V. (Sammy) Collins under license to Submarine Construction Co., of which he is president. Fred O. Wakefield was general superintendent, Jean E. Johnson was general marine superintendent, and S. R. Stapleton, Jr., was chief engineer for Submarine.

Prestressed Concrete

Reprints of CM&E's special report on Prestressed Concrete now are available. Single copies. 35¢; in orders of 10 copies or more, 25¢ each. Address your order to the editor, 330 W. 42nd St. New York.





Model 543. No machine or method can equal the low cost loading of this Barber-Greene loader. High travel speed, high capacity and finger tip discharge control save job time, man time, truck time.

Cut loading costs the continuous way

In a Massachusetts sand and gravel pit, a Barber-Greene Model 543 Bucket Loader handles 900 tons of ¾" stone every day—easily tops all other methods in truck loading operations.

The 543 is ideal for the all-day-long loading operations of one truck after another because its continuous flow maintains maximum capacity re-

gardless of the skill or zeal of the operator.

Its simple operation makes it easy for drivers to load their own trucks. A hydraulically controlled swivel conveyor has the reach to load highest and longest trucks and trim the load to full capacity every time. And this versatile loader can be easily converted into a coal, snow or leaf loader.



Model 550 removes windrows in a hurry ... with a capacity that keeps ahead of all trucks normally available. This light, highly maneuverable machine reduces windrow loading to lowest cost. Self-propelled at 10 m.p.h., with a turning radius of 8' 6".



Model 82A moves 1200 yards in 8 hours. That's the record of a Barber-Greene in a New York building and supply yard. Handles sand, stone, coal and other materials at high capacities. Easy operation permits driver to load his own truck.



Model 582 speeds topsoil stripping. Crawler mounted for sure footing on all soft bases, and equipped with a hydraulic swivel conveyor, the 582 is the fast, profitable way to load from stockpile, windrow or bank or to make light excavations.

56-38





New VHS Dragline Gives 33% More Wear

Mr. W. D. Tierney, of Tierney Bros., Contractors of Lockport, Illinois, says: "The draglines on our 3500 Manitowoc lead a rough life. Therefore, when our distributor told us about the possibility of increased service with new TRU-LAY VHS draglines we decided to give it a chance.

This new dragline lived up to all the claims made for it. It lasted over four months under a variety of operating conditions—working in sand, gravel, earth and slag. We estimate that we got at least one-third more service from this dragline than we had been able to obtain before. And we particularly like the pre-lubricated feature."

VHS draglines are setting records like these on construction projects

all over the country. They are made from a new grade of steel for wire rope—and are at least 15% stronger than Improved Plow Steel—the best grade available until now.

For Heavier Loads, Higher Safety Factor

TRU-LAY VHS's extra strength enables you to handle heavier loads with the same diameter line. And it gives a higher factor of safety for the entire service life of the rope.

For Shovel Hoist Ropes and Scraper Cables Too

TRU-LAY VHS was developed especially for the toughest applications in the construction field—draglines, shovel hoist ropes and scraper cables. In addition to greater strength, it is

also tougher—more wear resistant. And it has all the advantages of preformed construction. This means that it lasts longer in the roughest construction services.

Cuts Down Time—Saves Money

Because it is tougher and more wear resistant, TRU-LAY VHS rope lasts longer, costs less to use and cuts "down time" of equipment for wire rope replacement.

TRU-LAY VHS ropes are easy to order. Just ask for TRU-LAY VHS Shovel Hoist Ropes, Scraper Ropes or draglines, in the size you want. You don't need any complicated specifications.

Your American Cable Distributor has TRU-LAY VHS in stock now. See him or write to the nearest American Chain & Cable Company Office.



American Cable Division

AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.



WATCH FOR FIRESTONE WHEN THE BIG PUSH IS ON!



Firestone Rock Grips lead all tire choices where highways end-and big jobs begin!

Firestone Tubeless Rock Grips save time where you're pushing big projects. That's because of two great tread designs that carry your heavy equipment over any terrain! They eliminate your need for changing tires to match the job. You get the full flotation you need for sand and soft stuff. You get the armored grip you want for rough runs over broken rock. Safety-Tensioned Gum-Dipped® NYLON bodies combined with cut-resistant treads make these tires top choice for off-highway users. Your Firestone Sales Engineer can show you why you'll make them your top choice, too. Contact him today—through your local Firestone Dealer or Store.

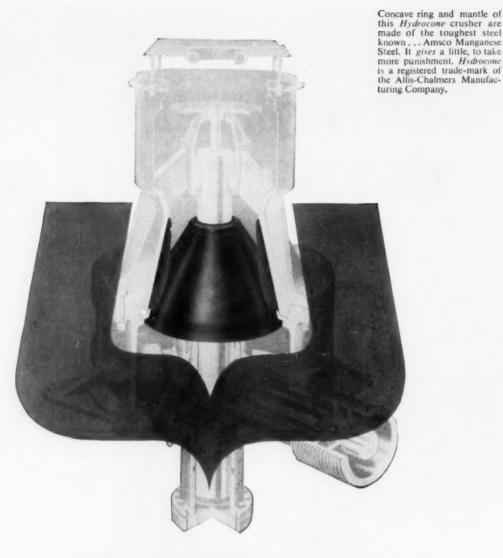


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Tire & Rubber Company

FIFESTORE
BETTER RUBBER FROM START TO FINISH

ROCK GRIP WIDE BASE

ROCK GRIP



How a little give adds a lot of life to AMSCO CRUSHER PARTS

Both mantle and concave ring crush a lot more feed because of certain properties of Amsco® Manganese Steel. The metal gives a little under crushing forces, absorbs stresses, resists cracking and chipping. Yet these same forces workharden the surface of Amsco Manganese Steel to as much as 500 Brinell . . . a high hardness, stubborn to wear.

Amsco Manganese Steel Crusher Parts main-

tain their ductile undersurface and workhardened surface even when worn thin. That's why Amsco parts endure severe abuse for so many work hours without letup.

To be sure of getting Amsco Manganese Steel, order replacement parts from your crusher manufacturer. Amsco makes manganese steel parts for most manufacturers of crushing, grinding and pulverizing equipment.

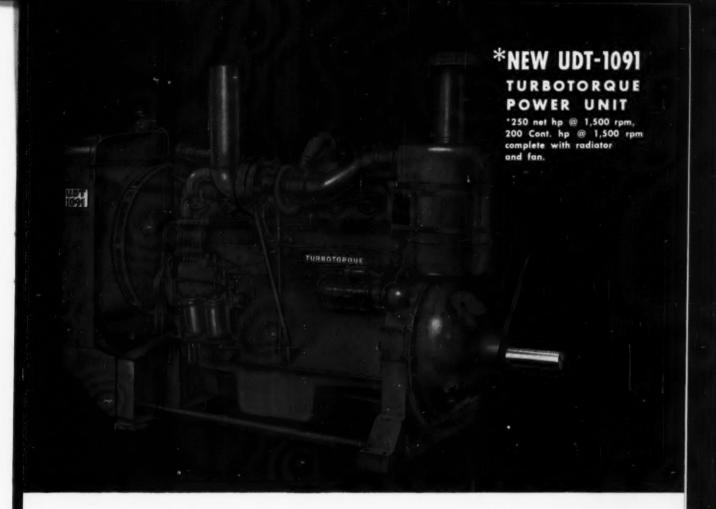
Amsco also produces other alloy steels with maximum wear resistance under particular service conditions



AMSCO

7111000

OTHER PLANTS IN DENVER LOS ANGELES, NEW CASTLE, DEL., DAKLAND, CAL., ST. LOUIS: JOLIETTE, QUEBEC



New 250 hp *Turbotorque International . . . power cost-cutter for your big machines

Now-lower cost, more dependable power for your big driven machines—the new 250 hp Turbotorque International UDT-1091 power unit. And that's on-the-job shaft horsepower—not the inflated laboratory variety against which big deductions must be made for fan, radiator, accessories, plus altitude and air temperature.

This instantly available 250 hp, along with an extra-large counterbalanced crankshaft and heavy flywheel, carries you through peak loads that stall lighter weight engines. As a result, you can make full use of the continuous duty 200 hp rating for more production at lower cost.

The UDT-1091 has all the features that have made

the 200 hp naturally aspirated UD-1091 a favorite diesel power source. In addition, it has a water-cooled oil temperature stabilizer as regular equipment and a radiator with greatly increased cooling capacity. The efficient exhaust-gas-driven AiResearch turbocharger moves 60% more air through the big 14-in. diameter air cleaner. This air is packed into the cylinders for minimum fuel consumption and higher power with lower exhaust gas temperatures.

Get the full story on the new UDT-1091 and the other 17 International high-output engines from your nearby International Power Unit Distributor or Dealer. His parts and service support is as dependable as the engines he sells! Call him soon,

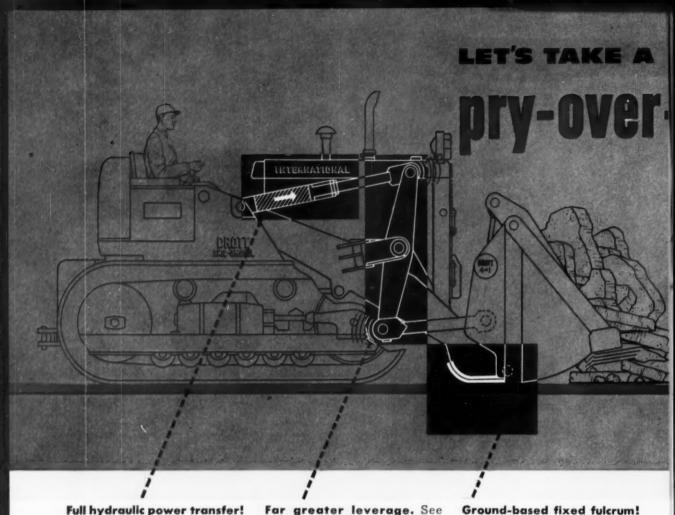
INTERNATIONAL

International Harvester Company 180 North Michigan Ave., Chicago 1, Ill.



CONSTRUCTION EQUIPMENT

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Strapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.



triple-power hydraulic force results from ingeniously applying oil pressure upon the piston's full face-instead of using the customary, and limited, rod-end area for the "power-push" surface! Only International Drott

Famous International Drott

gives you this tremendous hydraulic power to produce concrete-smashing, tree-grubbing, boulder-bucking pryaction break-out!

Far greater leverage. See how International Drott scientifically-correct lever length transfers full triple-power hydraulic force to the fulcrum. No costly power-dissipating "stepdowns" here to lose one-fourth to one-half your hydraulic power, as ordinary design does! Instead, International Drott full powerapplying leverage gives you tough-job-handling digging force and capacity ordinary loaders can't even begin to equal!

Ground-based fixed fulcrum!

Here's how exclusive International Drott design provides the famous frame-mounted skidshoes-to act as the absolutely necessary fixed fulcrum. Without this, true pry-action break-out is impossible. The big exclusive International Drott skid-shoes provide the steady, ground-based platform for true ground-level bucket-heaping roll-back of 41°!

Prove to yourself you command a vast new jobrange and capacity-with this super-powerful excavating, bucket-heaping pry-action. See what happens when you team this performance with the versatility unlimited of an exclusive Four-In-One. Compare how exclusive shock-swallowing Hydro-Spring "gentles" trouble-causing impact by 67%! Ask your International Drott distributor for a demonstration!



International Harvester Company, Chicago 1, Illinois Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL

CLOSE LOOK AT TRUE

shoe break-out action

Only <u>original</u> and <u>exclusive</u> International Drott design transfers <u>full</u> hydraulic power to give you tremendous extra excavating force!

Genuine pry-action break-out has three absolute essentials: (1) full hydraulic power transfer; (2) long lever, to apply pry-power without power loss; (3) fixed fulcrum, located to concentrate break-out force for maximum effect.

Here's how exclusive International Drott "separates the men from the boys" in heavy-duty loader design—and gives you front-end loader performance and capacity nowhere else available.

Kuschler Construction Co., New Orleans, Louisiana, specializes in demolishing old service stations to be replaced with super-service stations.

Kuschler tore down this old station in one day, then removed the concrete work the second day—doing the entire job with their International Drott TD-9 Four-In-One!

Previously, the contractor demolished the buildings and

concrete with compressed air hammers and a three-man crew. Their other make of front-end loader, without true pry-action break-out, was limited to loading debris.

Now, one man, using triple-power International Drott pryaction break-out, accomplishes as much in one day as the three-man crew and four separate items of equipment were able to do in a whole week!







From coast to coast thrift-minded owners report: "Climbing the 1,200-foot ramp that rises 100 feet from pit to primary crusher, our '95' Payhauler averages a 22-ton load of shot granite every 8 to 10 minutes;" reports Supt. H. C. Burgess, for Superior Stone Co., Woodleaf, North Carolina. "Production of this hauler unit is 1,000 tons per 7 hours." And the "95's" turbocharged diesel burns only 4½ gallons of low-cost fuel per hour on this tough quarry job!

"Grade-beating, rock-speeding Payhauler gives us the decisive profit margin of difference!"

"The fast reverse of the '95' Payhauler is a big advantage on narrow, one-way haul roads—enabling our two units to keep the big shovel busy," states Howard Durbin, for Durbin Brothers, Eugene, Oregon. "Our other haulers with slow back-up could not this."

"Down switch-back grades as steep as 30%, the '65' Payhauler takes its loads—then climbs back out at fast speeds," declares Supt. Howard Eaton, for Funderburk Construction Co., Sutherlin, Oregon. "The best of the other haulers of this size just can't keep going on our tough Roberts Mountain haul road, like the '65' can!"







"Two '95' Payhauler trucks (24-ton capacity) replaced three 15-ton competitive haulers, and handle the operation with ease," says Supt. Henderson Hawkins, Stone Mountain Grit Co., Lithonia, Ga. "With unusually fast hoist, good balance, and speedier delivery, the '95's' reduce spotting and dumping time, also save 20% on fuel."



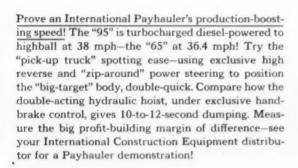
On tough St. Lawrence Seaway—for United Waterways Constructors—11 '95' Payhauler trucks are sparking a demanding monthly production schedule of 120,000 cu yd of rock, and 100,000 cu yd of common earth. Next-to-automatic Payhauler control gives safe, capacity-adding speed over rough terrain!



At 7,600 feet altitude, a fleet of 4 turbocharged diesel-powered "95" Payhauler units help Morrison, Walsh & Perrini highball rockfill to build Wishon Dam—in Sierra National Forest, California. All 4 operators vote superior riding comfort, torqmatic braking safety, hand-operated dumping brake, as stand-out '95' advantages!



"Engine power matches hauler capacity, to pull a 20-22 ton load from the quarry in second gear, over haul-road grades as steep as 15%," reports J. L. Sutherland, '65' Payhauler operator for Jefferson County Stone Company, Anchorage, Kentucky. "The Payhauler rides good, has excellent visibility, and maneuverability, shifts easy."



"Our three '65' Payhauler trucks move up to 2,000 cu yd of shot rock per 10 hours on a 1,200-foot delivery haul;" states Warren Greer, for Greer Brothers and Young, London, Kentucky. The contractor is using these trucks to move 165,000 cu yd of shot rock relocating a section of U. S. 27 in Lincoln County, Ky.



Satisfaction with two Payhauler trucks on one successful rock-moving contract prompted Clarkson Construction Co., Kansas City, Mo., to add three more "95's" to their fleet—to help handle a new, bigger contract. "Best production I've ever had," says Project Superintendent H. D. Brown.

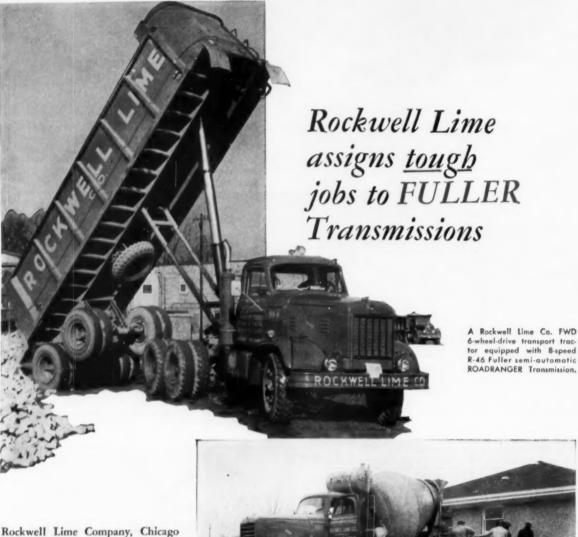




INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors...Self-Propelled Scrapers...Crawler and Rubber-Tired Loaders...Off-Highway Havlers...Diesel and Carbureted Engines...Motor Trucks...Farm Tractors and Equipment,



Rockwell Lime Company, Chicago and Berwyn, Illinois, delivers readymix concrete to the pour site through sticky mud or sand—with 10-speed Fuller 10-CB-65 Transmissions in its rapidly expanding fleet of FWD 6-wheel-drive trucks equipped with 501" engines.

For heavy-haul operations, overthe-road and off-highway, Rockwell Lime uses a rugged FWD 6-wheeldrive rear dump tractor equipped with an 8-speed Fuller R-46 ROAD-RANGER® Transmission. This unit is capable of top legal highway speeds, as well as difficult backing and maneuvering through building and offroad areas . . . often several blocks at a time.

In heavy duty construction and transport work, wherever the going is extra rough, Fuller Transmissions dealer for put horsepower to work effectively.

The closely-spaced ratios permit operators to select exact working speeds

One of Rockwell Lime's fleet of FWD 6-wheel-drive ready-mix units with 10-speed

and engines operate in peak hp range with greater fuel economy.

From more than 110 different models available, there is a Fuller Transmission designed with your job in mind. Check with your local truck

required. There's better load control,

dealer for the *right* Fuller Transmission for your job.



FULLER MANUFACTURING CO. Transmission Division - Kalamazne, Mich. Beit Drep Forge Bry., Milwanhon I, Wis. - Sholor Asic Co., Lesisville, Ky. (Sabsidiary) - Salos & Sarvice, All Products, West. Dist. Branch, Galdand B, Col. and Santhwest. Bist. Divinc, Tolica 3, Ohlo. Major decisions work out better in the field after they have been tested on a model like this one. Building a model takes time but it can pay off.

Models Make Big Jobs Easier

CONSTRUCTION MODELS, generally considered a designer's tool, are proving a valuable builder's aid for Western Contracting Corporation of Sioux City, Ia.

Western uses models for large three-dimensional projects, such as earth dams, where it is sometimes difficult to visualize the whole situation from maps and drawings. They were very useful on three dam projects on the Missouri River where Western moved over 98,000,000 yards of dirt. Since it began using models, Western has made 23, at an estimated cost of 10,000 man hours and \$35,000.

"Models are of the greatest value in estimating the job," says M. F. Warner, Western's chief of engineering. "Of course, they are only an aid; they cannot substitute for the regular estimating procedures. Their use is in checking and clarifying these standard techniques. On a big job, a model is well worth while if it can prevent one important error in estimating."

Specifically models are useful in the following ways:

Clarity—An engineer can see the whole job and what it calls for at a glance, without having to wade through a mass of drawings and specifications. This helps prevent oversights and misconceptions.

Check Information—A model may reveal inconsistencies in the data or show that needed information is missing. On one of Western's dam jobs the information seemed complete. When the model was studied, it was ap-



CONSTRUCTION MODELS . . . continued



CONFERENCE centers around model table. Western officials, L. G. Everist, M. F. Warner, and H. Everist, Jr., finds models an important aid to effective job planning.

parent that additional soil data was needed. Thirty-five test holes supplied the information. On another job, the model emphasized a sand bar in the river that had an important effect on job planning.

Conference Aid—Group discussions are easier around a model than around a stack of drawings. In conferences, both within the company and with outsiders, a model helps each participant make his own points, and helps everyone to talk and think about the same thing.

Scheduling—A model gives a graphic idea of the various phases of the job and how they relate to each other. It helps to set up sequences and schedules.

Job Equipment—Using a mental picture gained from specifications and drawings, a superintendent might classify a project as a load and haul job. A model may reveal portions of the work that scrapers could handle better.

Field Use—After a contract has been secured, the model goes to the job site. Here it is used to locate service areas, and to plan roads, water, and power lines.

Western likes to have the men who will prepare the bid, also build the model. By the time they have sawed out a model, contour by contour, they know the layout well, and this helps in the bid calculations.

Models are built specifically for

construction use. While accurate, they are not as precise as a research model. Nor are they as polished in appearance as a public relations model.

Time is usually a problem. The interval between invitations for bids and the closing date may be 30 to 45 days. This leaves little time for model-making during the estimating period. To give itself more time, Western frequently

prepares a model of the area as soon as it hears about the proposed job. When invitations are received, the job can be spotted quickly on the model.

Basic data for the models comes from contour maps supplied by the owner or the government. The contours are transferred to hardboard or plywood by one of two methods. In some cases a pantograph is used to transfer them to scale. In others, the maps are enlarged to the right size by photographic projection, and the contours are traced directly. Each lift is then cut out with a power ligsaw.

A distorted scale is used, with the usual combination being 1:200 horizontal and 1:80 vertical. This works well with 1/8 in. hardboard where each lift of hardboard would equal 10 ft.

Pieces of the model are removed or added to keep it up to date with the progress of the job. Different sections are color coded to show various zones and sources of materials.

Model building is a technique that contractors have not used much up to now. Testimony to its usefulness at Western appears in the models of completed jobs. On these models, the paint is worn from constant contact with scale rulers, and key areas are grubby with penciled sketching of problems and their solutions.



TECHNIQUE of model making is demonstrated by G. Nelson and R. Nurre. Contour drawing is enlarged photographically, and contours are transferred to 1/8 in. board and cut out.



Toughest trucks made— Toughest lubricants used!

Cement Mixer Takes 60° Grade, one of many Four Wheel Drive tests. In all these grueling tests, Cities Service Lubricants make the grade and then some! They've done it for 20 years.



Early Four Wheel Drive Truck is one of vehicles in firm's museum. Founded in 1910, the company's first production amounted to 12 vehicles. Today, it is thousands yearly. Four Wheel Drive Auto Company has been Cities Service customer for 20 years!

If you think things are tough on the trucks at your construction job or quarry, you should visit the Four Wheel Drive plant at Clintonville, Wisconsin.

There you'd see famous Four Wheel Drive trucks going through tests tougher than they'll probably ever meet on your job or anyone else's.

Ditto for the Cities Service Lubricants that Four Wheel Drive uses.

For what could be tougher on a truck and its lubricants than grinding up a hill in loose sand...sinking axle deep in a mud bath...driving diagonally across a washboard test ground...and climbing a 60 degree grade of dirt or gravel?

Make no mistake, Cities Service Lubricants meet the test...and have for the past 20 years at Four Wheel Drive Auto Company.

So it stands to reason that however tough the terrain and conditions on your job, Cities Service C Series Motor Oils and Trojan H Multi-Purpose Grease will more than make the grade... especially if you follow the expert recommendations of your Cities Service Labrication Engineer.

For all the details, call the nearest Cities Service office, or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.

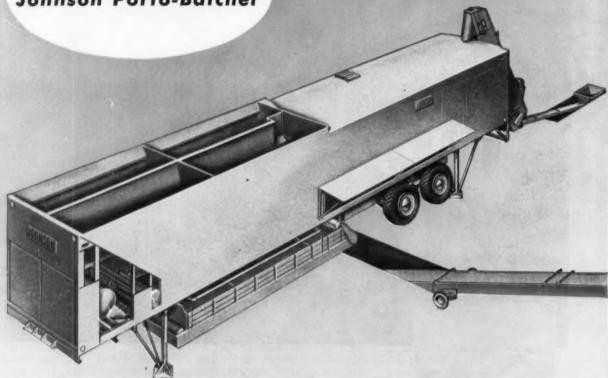
CITIES (SERVICE

QUALITY PETROLEUM PRODUCTS

August 1957 - CONSTRUCTION METHODS and Equipment - Page 183

NEW automatic batch plant

Johnson Porto-Batcher®



Plant portability profitably cuts truck hauling costs....

On paving and structural concrete jobs, keep your haul distance short between plant and pouring area. It costs less to supply raw materials over longer distances to the plant, and keep your more expensive transit-mix or batch trucks operating on the short end of the haul. To do this, you need on-the-job batching, with convenience in moving plant from one site to the next.

Here's your opportunity

The portability and easy assembly of Johnson's new Porto-Batcher let you pick up and go — and set up at new site, ready to work, in as little as a day's time. You have 3 portable trailer units on wheels: main plant, discharge conveyor, and cement elevator — complete with 5th-wheel-plate or towing eye, brakes, lights, etc. Main trailer overall width is 8½ feet — height 12½ feet — length 4½ feet. Plant is ready to start producing in minimum time on

arrival at new site, because with the Porto-Batcher there's no complicated reassembly, heavy concrete pedestal foundations or high lifts necessary, as with conventional stationary plants.

80 to 100 batches an hour

Interlocked batch control with repeater gives accurate, push-button operation. You just set the weighbeams and water-pointer for each material per batch—set the repeater for number of batches needed—press the starter button, and the Porto-Batcher weighs out exact number of batches automatically. Depending on size of trucks and batch quantities, you get 80 to 100 batches an hour! Want more facts and figures? Better call your Johnson distributor about Porto-Batcher or write for literature today.

C. S. JOHNSON Company

CHAMPAIGN, ILL. . STOCKTON, CALIF.

Koehring Subsidiary



C17010

CONCRETE PLANTS . BINS . BATCHERS . SILOS . ELEVATORS . CONVEYORS . RECEIVING HOPPERS

on wheels

Johnson wheel-mounted Porto-Batcher combines portability, easy assembly, big capacity.

Handles 4 aggregates, weighs cement on separate scale.

Capacity, 4-compartment aggregate bin: 39 cu. yds. heaped — 46 yds. with 12" sideboards.

700-gal. built-in water tank.

240-bbl. cement compartment, fed by portable elevator.

230-bbl.-per-hour cement elevator has boot hopper, or screw conveyor; undertrack shrouds, or truck hopper.



veyor is available in two styles: with 11'6" clearance above ground-line for transit-mix trucks — and with 8'10" clearance for batch trucks. Water piping has hose connection to batcher trailer.

Porto-Batcher has fullyautomatic, interlocked batch control, with repeater.

4 aggregates are weighed in 2 hoppers — 2 aggregates in each hopper.

2 aggregate scales have two 2,000-pound weigh-beams each.

Cement is weighed in a separate, covered, hopper equipped with 1,000-pound weigh-beam scale.

All internal wiring is factoryinstalled, complete with starters, circuit breakers in panel, motor controls, etc.

CLAMSHELL, CONCRETE BUCKETS

Wide-wheel Trenchliner ® added to Parsons line

Developed to meet the demand for wide work range in a medium-size machine, Parsons new 170 has extra-wide wheel frame. It digs 20 to 32 in. wide, 5¾ ft. deep. Has hydraulic wheel-hoist on powertilt mast. Spoil conveyor is hydraulically-driven. Belt speeds are independent of digging wheel speeds — easily handle maximum yardages from the wide wheel. Larger and smaller size Parsons Trenchliners also available — in all types.

PARSONS • Newton, Iowa Division of Koehring



Light-weight fork lift has ½-ton load capacity

Kwik-Mix S-10 Moto-Bug® with fork lift weighs only 1575 lbs., works over light ramps, scaffolds, floors where heavier lift trucks can't safely travel. It lifts 1/2-ton load up to 6-foot height. Forks are 20 or 30 inches long, and adjustable from 6 to 32 inches wide. Tilting mast optional. Fork lift is interchangeable with 10 or 15 cu. ft. hopper, 34-ton platform. Bigger Moto-Bug available; also concrete, plastermortar and bituminous mixers. KWIK-MIX - Port Washington, Wis.

Division of Keehring



1-second gravity-dump speeds haul cycles

There's no waiting for slow-acting body-hoists on this job. Koehring Dumptor drives up, body forward — operator trips the body-release lever, and gravity dumps the 6-yard load instantly. Cuts 15 to 25 seconds off cycle-time. And, gravity-dump never balks — never wears out. There's no expensive hoist maintenance, replacement parts, or hoist down-time when you haul with Dumptors. Better check what this can mean on your work.

KOEHRING DIVISION
Koehring Company
Milwaukee, Wis.

ASSRE



Biggest Favorites . . . because they're Biggest Savers!



BUFFALO-SPRINGFIELD ROLLERS are made to cut schedule time, job and operating costs

These rollers, two Standard-Duty and one Heavy-Duty model, are built with the contractor in mind. All have many outstanding and exclusive performance-plus features. They represent the very best tandems on the market today.

Heavy-Duty models, ranging from 5-8 to 10-16 tons, are designed especially for heavy-duty highway and public works projects, and for all types of finishing, maintenance and repair work. Built-in quality features . . . such as unmatched 4-speed transmission or torque converter drive

with 2-range transmission, powered roll brakes, higher ground clearance, greater operator visibility, complete protection against any possible damage to the transmission and final drive gears . . . cut operating and maintenance costs to an absolute minimum.

Standard-Duty models, designed and built with the thought in mind that not every job, not every user, requires the ultimate in roller equipment, are available from 5-8 to 10-14 tons—and for the dollar invested, represent the finest rollers on the market today.

Both lines offer the best in: choice of highly efficient gasoline or diesel power • finest adjustable bevel gear final drive • single power unit assembly assuring precision alignment of engine, transmission and final drive pinion • variable rolling speeds in either direction up to 5.6 mph • low-pressure hydraulic steering • and adjustable, tapered roller bearing yoke and king pin assembly.

Before you buy another 2-axle tandem roller, see your Buffalo-Springfield distributor; write for complete details.



BUFFALO-SPRINGFIELD ROLLER CO.

DIVISION OF KOEHRING COMPANY . SPRINGFIELD, OHIO



This German machine's a...

Digger, mixer, paver-all in one

"WAS IST DAS?" the sleepyeyed farmer said in disbelief as he stepped out of his house and looked up the road.

"Was ist was?" his wife said, coming to the window.

"Das, das!" the farmer said, excitedly, pointing.

"Aiee," the farmer's wife said clenching her hands together. "Was IST das?"

The "das" causing the excitement at Hannover, Germany, was an odd-looking machine moving slowly down a dirt road and leaving a paved surface behind it.

What was it? It was a new road-laying machine that combines the features of an excavator, mixer, and paver.

Named the "Sawoe", the machine produces 656 to 985 ft of concrete or asphalt-treated secondary road per hour in one working operation using existing soils as aggregates. Tractorpulled, it measures 36 ft 5 in. long and weighs about 32 tons.

It moves on articulated tracks while grippers break the ground in front of it to a depth of 12 in. Soil is lifted into the machine, crushed, mixed with water and

cement (or asphalt), and distributed on the road.

The Sawoe was developed by Edward Linnhoff of Berlin, Germany, a machinery manufacturer. The rig consists of a stabilizing mixer and a towing tractor which can be disconnected and used separately.

The rig is supported on two sets of articulated tracks so that irregularities in the road bed are transmitted to the working shafts continued on page 190

How the Machine Operates

Before putting the rig to use, the contractor has to make an accurate analysis of the soil to determine the most suitable additives. Once this has been determined, the bed is excavated to grade and any required aggregates added.

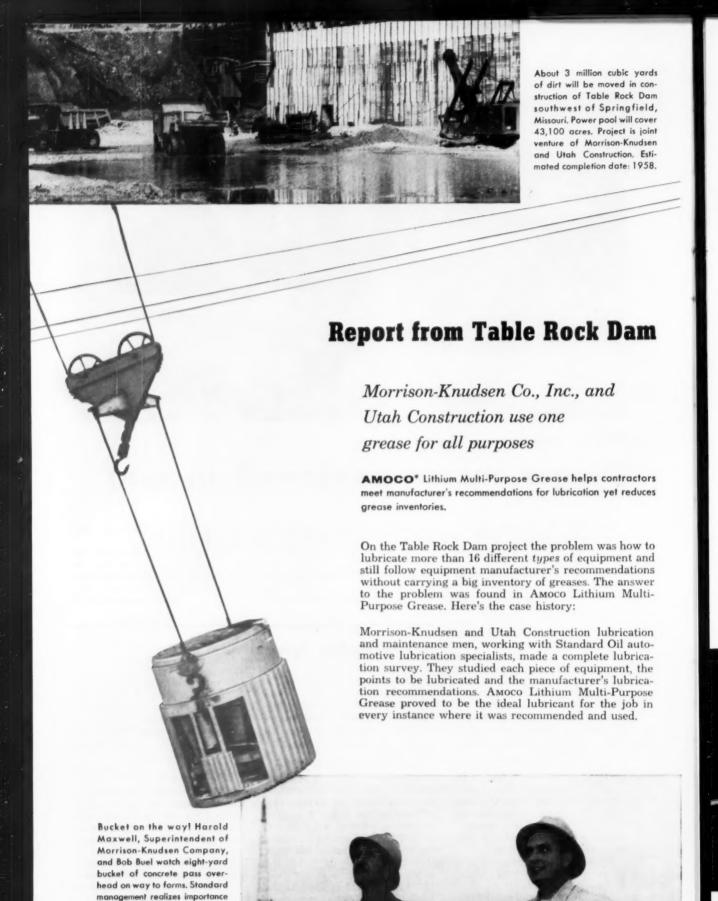
Then the Sawoe goes to work. It operates up to 52½ ft per minute, according to the manufacturer. Normal width of a single pass of the machine is 6 ft 7 in. The maximum working width is 8 ft 3 in. The front tracks ride over the soil to be treated; the back tracks are adjusted to suit the width of the layer to be stabilized. During stabilizing operations, the tractor driver steers the machine by sighting on carefully located

surveyor's poles.

When stabilizing a strip next to an existing strip, the driver can, from his low position on the tractor, make certain that the new strip butts directly against the existing one. No turning of the machine is required.

At the end of each strip the mixing hopper is raised hydraulically and the machine moved to one side, clear of the stabilized strip. Then the rig simply backs up to return to the starting position and is ready to lay the next strip.

For this operation the tractor supplies the power, and the operator on the rear of the machine steers it by means of the rear crawler tracks.



of lubrication on construction projects, backs up lube sales with top-rated technical service. Amoco Lithium Multi-Purpose Grease was adopted for all equipment. Morrison-Knudsen and Utah Construction have realized substantial savings. A smaller grease inventory reduced investment in supplies and cut record keeping. Dispensing and handling equipment now used is much less than what was formerly required. Application time is reduced to a minimum. Misapplication errors and resultant bearing failures are virtually eliminated.

Your lubrication problems can be licked in just the same way Morrison-Knudsen and Utah Construction have done it at Table Rock Dam. No matter where your job may be, in any of the 15 Midwest and Rocky Mountain states, there is a Standard Oil automotive lubrication specialist nearby. Call him. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.



Standard's Bob Buel (left) checks lubrication data with Jerald Maxwell, lube foreman with Morrison-Knudsen. Bob is qualified to assist customers with lubrication problems. He has been doing this work for more than four years. He's a graduate of Missouri School of Mines with a B.S. degree and has completed the Standard Oil Sales Engineering School. Customers find Bob's experience on the job and special training pay off for them.



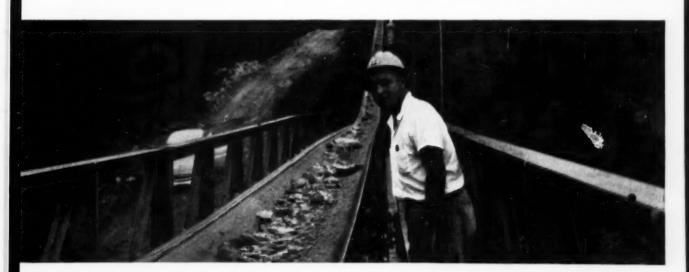
AMOCO* Lithium Multi-Purpose Grease

- Suitable for chassis, wheel bearing, water pump, universal joint, gear case, track roller and other grease lubrication.
- Pumpable at all temperatures. Easy to apply.
- Lubricates effectively in all weather. Soft grade available for extremely low temperature service.
- No bearing wash out even in severe service.
- · Does not oxidize or cake in bearings.
- · Mechanically stable. Will not thin in use.
- Stable in storage. Maintains uniform consistency;

STANDARD

STANDARD OIL COMPANY (Indiana)

*Trade mark Amoco registered U. S. Patent Office by The American Oil Company and used by Standard Oil Company under license.



Standard's Bob Buel checks conveyor belt used to move 450 tons of crushed rock per hour more than a mile. Bearings on conveyor are lubricated with AMOCO Lithium Multi-Purpose Grease.

Rome Disk Plowing Harrows



Rome Master Disk Plowing Harrow takes a deep cut, turning material over so that excess moisture can evaporate.

BUILD ideal SUBBASE

for roads, airports and dams

For faster, more efficient pulverizing, aerating, blending and stabilizing of subbase materials put a Rome Disk Plowing Harrow on your job! Here's the weight and design to cut deep—pulverizing action to thoroughly mix the subbase and return material to its original position—free from ruts or windrows—the ruggedness to match the power of the largest crawlers.

Rome Disk Plowing Harrows are ruggedly-built for heavy-duty construction work. Massive main frames hold gangs level and make them penetrate uniformly. Super-strong bearings—your choice of Timken Roller or White Hard Iron—hold blades rigidly in position, provide easy rolling action. Notched blades are the finest made to withstand the punishment of rocks and stumps. Rome Disk Plowing Harrows are available in a variety of widths, in both offset and Rome Master Tandem. You have your choice of mechanical, hydraulic or cable control angling methods as well as wheel-type offsets in certain sizes.

Get all the facts at your Rome-Caterpillar Dealers.

ROME PLOW COMPANY, Cedartown, Georgia

YOUR ROME DEALER IS YOUR CATERPILLAR DEALER

GERMAN PAVER . . . continued from page 187

in reduced form. This helps produce a level, paved surface.

Main frame of the machine is lightweight welded steel designed to mount either the tracks or sprung axles fitted with pneumatic tires for highway movement.

Power for the mixer comes from an 8-cyl, air-cooled diesel engine that also drives a generator. This generator supplies power to the electric motors driving pumps. The tractor is powered by a two-cyl air-cooled diesel engine.

The mixing hopper carries three working shafts in fully-enclosed, dust-proof bearings. These rollers are driven by a single roller chain located in a completely enclosed casing. They are provided with guides to fix their positions.

First shaft in the mixing hopper is a high-speed cutter shaft to break up clods of earth. The two following shafts are similar to those in a twin-shaft mixer. They mix the soil broken up by the cutter with stabilizing asphalt or cement.

For bitumins, the hopper is equipped with two sets of spray nozzles. The amount of binder added can be accurately adjusted by means of precision measuring instruments.

Binder is drawn through hoses from a truck running beside the mixer and is pumped into the spraying pipe by a pump with a maximum capacity of 65 gpm mounted on the mixing hopper.

Water for cement stabilization work is supplied by a pump with a capacity of 110 gpm that delivers into a second, wide-spray sprinkler unit.

Two men only are needed to operate the machine. One man drives the tractor; the other operates the mixing machine.

help your HEART FUND help your HEART

AUSTIN-WESTERN HYDRAULIC CRANE



A-W hydraulic crane setting 24 in. x 20 ft. drain pipe on highway job near Philadelphia

JAS. J. SKELLY, INC., Media, Pa., REPORTS:

A-W crane's live boom and maneuverability speed construction operations



Paul Skelly says: "Our present job is located in Springfield Township near Philadelphia, and includes widening and repaving about 3 miles of road in a residential area. We purchased an Austin-Western hydraulic crane with 4-wheel drive and 4-wheel steer at the beginning of the job, because we felt it would help us with many

lifting and hauling jobs where other cranes would find it hard going. We've never made a better investment than with our A-W."

Great for laying pipe. "We've used the A-W to lay all kinds of pipe—everything from 15 in. concrete drains to 43 in. x 27 ft. corrugated arch. The unit is so accurate that we can lower pipe ½ in. or ½ in. at a time, which means faster and better fitting. Regardless of size, we can lay 5 or 6 joints of pipe in the same time it would have taken us to lay one joint by ordinary methods. We also find the A-W speeds up the unloading, placing and reloading of concrete forms to a remarkable degree."

Sees wide use by contractors. "Our experience with the A-W has convinced us that its use by contractors should increase by leaps and bounds in the next few years. In our business, time is a big factor in profits, and this machine really saves time."

For more information on this remarkable crane, fill out and mail the coupon today. You'll be glad you did.

AUSTIN-WESTERN 607 Farnsworth Ave Please send comple hydraulic crane.		
Name		
Title		
Company		
Street		
City	Zone	State

Power Graders - Motor Sweepers - Road Rollers - Hydraulic Cranes



AUSTIN-WESTERN BALDWIN-LIMA-HAMILTON

Construction Equipment Division
OTHER DIVISIONS: Eddystone • Lime •
Electronics & Instrumentation • Hamilton •
Loewy-Hydrogress • Standard Steel Works
• Madeen • Petton

AURORA, ILLINOIS, U.S.A.

10 LEADS TO BETTER, and BIGGER FASTER RESULTS PROFITS!



MACADAM DENSIFICATION. The Jackson Multiple Compactor gives you base and sub-base compaction at its quickest and best. Each of the 6 units in workhead delivers 4200 3-TON BLOWS



PAVEMENT WIDENING. Any arrangement desired of the vibratory units of the Jackson to fit the job most advantageously and provide 100% of required density in ONE PASS is easily and quickly made.



GRANULAR SOIL FILLS. The Multiple Compactor quickly achieves specified density, gets into places bigger, more expensive equipment cannot reach. Individual units can be detached, operated as manually guided compactors.



SOIL COMPACTION. Self-propelling, the Jackson Compactor, with 12" to 26" interchange-able bases, achieves specified density of granular soils in 4" to 8" layers at the rate of 600 sq. yds. per hr. Perfect for bridge and pipe line fills, concrete floor sub-bases and similar applications.



BLACKTOP WIDENING & PATCHING. The same machine operated from power plant on auto-trailer with pickup for Compactor is most efficient means of blacktop pavement patching, paving walks, drives, etc. Will compact up to 600 sq. yds. per hr close to maximum density.



TWIN-UNITS - ONE OPERATOR, With a two-unit, side-by-side or tandem hookup of JACKSON COMPACTORS, one man can readily do the work of two, since the compactors are self-propelling and he has only to guide them.



CONCRETE VIBRATION FOR HIGHWAY AND AIRPORT PAYING INTERNAL TYPE; super-powered, gives full width internal vibration through full depth of very thick slabs. Saves time, cement; provides greater density and compressive strength,

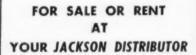




SURFACE TYPE; does perfect job of vibrating all mixes in depths used on highway projects. The owner of a JACKSON Paving Tube can quickly switch from internal to external vibration, or vice at minimum expense



MUNICIPAL PAVING: This vibratory screed strikes off to all crowns, undercuts at curb or sideform, works right up to and around ob-structions, is rolled back for second passes on 4 rollers. Most productive and convenient screed made.





LUDINGTON.

MICHIGAN



GENERAL CONSTRUCTION

(Left); 6 H.P. engine-driven, flexible shaft vibrator. Excellent for both thin and thick sections. (Right); 21/2 H.P. electric vibrator (for light-socket operation). Handy as a pocket in a shirt, powerful enough to handle all general construction concrete vibration with shafts up to 28'.

Construction Men in the News ...



Denny Heads New England Firms for MC&S

WILLIAM DENNY, executive vice president of Merritt Chapman & Scott's construction department, will become president of MC&S's two New England subsidiaries. They are the Savin Construction Corp., and The Whaling City Dredge & Dock Corp.

Denny succeeds A. I. Savin as president of both companies. Savin, who retired from active duty as an MC&S vice president, will continue to serve the company as a consultant. His sons, Herbert C. and Marvin S., both MC&S officers, also will retire from active service with the organization.

G. G. Werner, Jr., construction department vice president, will be vice president and general manager of the two companies and will be directly in charge of their construction operations under Denny.

ALFRED T. KROOK, former vice president of Stone & Webster Engineering Corp., and president of its Canadian counterpart, will become vice president of Bechtel Corp., San Francisco. He also will hold the title of vice president in Bechtel International Corp., and Canadian Bechtel, Ltd. Krook is a veteran engineer in the petroleum, pipeline, and power fields.

C. A. BUDNIK, veteran heavy industrial construction manager, becomes assistant manager of the industrial construction division, Kaiser Engineers, Oakland, Calif.

He will assist W. F. Boft, division manager, in the field management of Kaiser's construction projects throughout the United States. Budnik, most recently, was supervising engineer and assistant to the executive vice president of Maxon Construction Co., Dayton, O. He started in construction as a common laborer on dam, tunnel, and bridge building projects in 1923.

He graduated as a civil engineer from the University of New Mexico and is a registered engineer in various states throughout the United States. In his new capacity with Kaiser, Budnik will be headquartered at the company's executive offices in Oakland.

WILLIAM L. FRYAR, well known western construction man, has organized the Fryar Construction Co., a general contracting firm that will specialize in industrial, commercial, and light commercial building projects.

Fryar will be the company's president. Other officers are: Albert L. Johnson, vice president and chief estimator; and James B. Boyle, secretary-treasurer.

Fryar has represented some of the region's foremost contractors for the past 16 years. He personally has managed more than \$250 million in construction projects.



HERBERT W. STANDKE (left) and JOHN A. CATALDO (center) are new assistants to the vice president and general manager of the John A. Volpe Construction Co. of Malden, Mass. PHILIP A. ROSSETTI (right) is new assistant to the firm's chief engineer.

Cataldo is a native of Boston. Before joining Volpe in 1949 he was an expeditor, estimator, and project engineer for several New England contractors. He presently is supervising the company's building operations in Middletown, Conn.

Standke came with the Volpe Co, in 1950 from Edmund J. Rappoli Co., Cambridge general contractors. He presently is supervising construction of a \$10million shopping center in Peabody, Mass.

Rossetti came to Volpe in 1951. His background includes service with M. DeMatteo Construction Co. and Merritt-Chapman & Scott

continued on next page



Why concave sides insure longer V-Belt life

With one simple test you can demonstrate to yourself why the concave sides (Fig. 1) of the Gates V-Belt insure far longer belt life.

Just feel the sides of a Gates V-Belt on the bend. Note that in bending around the sheave these sides fill out and become straight (Fig. 1-A). That means the belt makes full contact with the sides of the sheave groove; grips the sheave evenly.

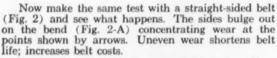
This even contact distributes wear uniformly across the sides of the belt. Uniform wear lengthens belt life; keeps costs down.



THE CONCAVE SIDE

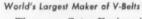
U.S. PAT NO 1813698





Cut V-belt replacement costs and down time. Specify belts that grip evenly and wear longer...specify Gates Vulco Rope — the V-Belt with concave sides.

The Gates Rubber Company • Denver, Colorado





There are Gates Engineering Offices and Distributor Stocks in all industrial centers of the United States and Canada, and in 70 other countries throughout the world.

Gates Vulco Drives

MEN IN THE NEWS . . . continued



RAYMOND L. BENSON, executive vice president and treasurer of Ragnar Benson, Inc., Chicago engineers and builders, will become the firm's new president. He succeeds his father, Ragnar, the firm's founder, who will relinquish his office to become chairman of the board.

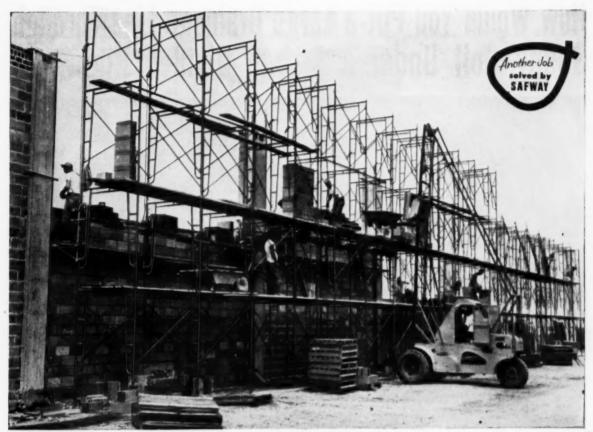
Other executive changes include the election of Verne W. Uker from vice president to senior vice president; Thomas L. Malzacher from assistant treasurer to assistant to the president; Preston P. Hayes, from manager of sales to vice president in charge of sales; and George C. Axelson from assistant secretary to treasurer.

Benson is a graduate of Northwestern University. He joined the U.S. Navy in 1945 as an Ensign and saw one year's service in the Pacific Theatre. He started work for Ragnar Benson in 1939 as a water boy on a part time basis and began working full time for the company in 1946.

With the Corps of Engineers . . .

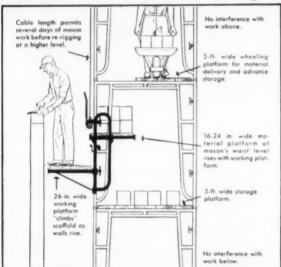
COL. JOHN S. HARNETT becomes District Engineer for the San Francisco District in July. Now Assistant Division Engineer, South Pacific Division, he will succeed Col. John A. Graf.

COL. JAMES U. MOORHEAD becomes Assistant Chief of Engineers for Real Estate, effective in August. Moorhead now is assigned to the Army Forces Far East. He will succeed Col. W. W. Ragland in the post.



Safway Mobil-Brackets Follow Courses of Block on 225-ft. Walls

How to Save 25% on Total Wall Costs



LEARN HOW SAFWAY CAN HELP YOU



Similar savings are available to you by using Safway Mobil-Brackets. Your Safway dealer can show you how—and offers complete stocks of Mobil-Brackets and Safway Scaffolding for SALE or RENTAL. Write today for BULLETIN 58.

NEW MOBIL-BRACKET METHOD REDUCES MOST COSTLY FACTOR IN BUILDING MASONRY WALLS

MODERN METHODS really paid off on construction of the State Brand Creameries warehouse at Mason City, Iowa. Using "climbing" mason platforms and efficient material handling, the contractors completed 225-ft. walls with important savings in time and cost.

Palletized block is delivered direct to working levels by lift truck. And the masons work to best advantage from platforms mounted on self-raising Safway Mobil-Brackets. As courses of block are laid, working and material platforms are elevated to keep masons at their ideal working level. Laborers use a walkthrough platform inside scaffold frames for material delivery and advance storage.

The Safway Mobil-Bracket method reduced actual block laying time—biggest factor of in-wall costs—and realized overall savings of 25%.



How Would You Put a Large Drainage Line Through Soupy Soil Under a 4-Lane Divided Highway?



Although quicksand surrounds this Armco Liner Plate tunnel under the Queen Elizabeth Way, work progresses safely and efficiently inside. Note litter carrier on monorail used to remove muck.

This is an Armco Liner Plate, used to make tunnel structures.

It couldn't be done with an open trench because traffic had to be maintained. A detour was impractical. So they planned to install the drainage line by tunneling-and Armco Liner Plates got the job.

The project involved a 6-foot-diameter outfall line to be installed under the busy 4-lane Queen Elizabeth Way, an expressway running between Niagara Falls and Toronto,

Here's how the job went. First, a shaft was sunk in the center mall of the highway. Then an 8-foot-diameter tunnel was driven in opposite directions under the two lanes. As expected, they ran into pockets of quicksand. In these areas, they used a metal shield operated by hydraulic rams to push forward through the guicksand. A sluice gate near the bottom of the shield permitted removal of the fluid sand.

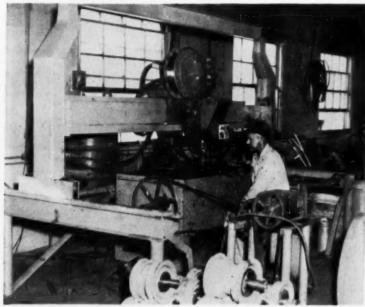
In solid ground or quicksand, every time the digging advanced 18 inches, an 8-foot-diameter ring of Armco Liner Plates was bolted to the preceding ring. After the structure was completed, the drainage conduit was installed inside the Liner Plate tunnel.

Armco Liner Plates have more strength per pound than any other plates commonly used in tunneling jobs. As determined in comparative joint and compression tests, this is due to the deep corrugations and offset-lap joint of Armco Plates. For complete details, write us. Armco Drainage & Metal Products, Inc., 5237 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

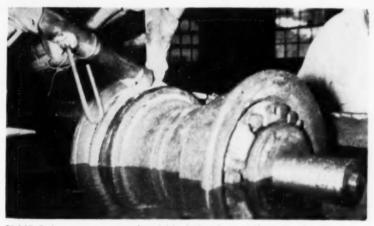
ARMCO LINER PLATES



The Maintenance Shop . . .



WELDING HEAD on travel carriage automatically hardsurfaces tractor rollers as they rotate in water tank on shaft. Quench keeps weld metal temperature at 100 deg.



CLOSEUP shows vacuum system (top left) which picks up 90% of alloy flux that is continuously deposited over arc. Residue is collected from tank and re-used.

Quench Speeds Hardfacing

AN INGENIOUS METHOD of mounting tractor rollers so that they rotate under an automatic submerged arc welding machine while half under water allows an Arkansas welding shop to hard-surface them without prior disassembly.

The shaft-mounted rollers turn under the welding head in a tank of water that acts as a continuous quench for the deposited bead. This brings the temperature of the weld metal down to about 100 deg almost instantly, and, because the inner workings of the rollers do not become overheated, pins and bushings can remain in place. Other advantages are that distortion is minimized and grease or oil in the rollers does not flow out under heat.

The welding shop, Longhorn Welding & Press Co. of Benton, Ark., uses a Lincoln LAF-3 automatic welding head with a current setting of 375 deg, 25 to 30 v. The head is mounted on a travel carriage that rides a 12-ft horizontal beam on the machine frame. Indexing across the roller tread is controlled by the carriage drive mechanism.

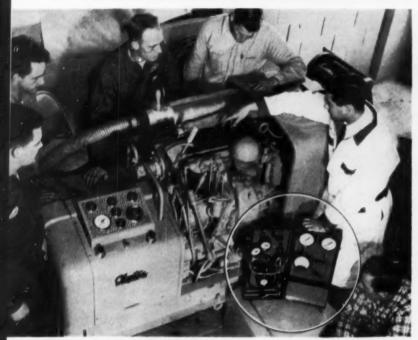
The rollers, 6 to 8 in. in dia, turn at a speed of about 2 rpm through a belt drive from a variable-speed gear box and motor. Speed control is important because some rollers have a tapered contour. To build up deposit fast and to cut down on finish grinding, changes in travel speed of the arc across the surface are necessary.

Longhorn uses a special alloy flux to supply the hardening agent to the L-60 mild steel electrode wire that is fed from a reel on the carriage. The flux is an agglomerated composition, Lincolnweld H-535, containing ferro-alloys of chromium, manganese, silicon, molybdenum and carbon so that the deposited metal shows a hardness range of 33-37 Rockwell C. In some cases this range is even higher because of the fast water quench.

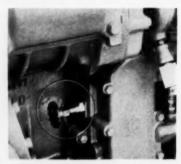
About 11/2 lb of flux is used for each pound of wire. Almost 90% of the flux that is deposited continuously over the arc is recovered by an auxiliary vacuum system located behind the welding head. The remainder of the flux falls into the quench tank, along with the slag. Longhorn drains and cleans the tank after about 75 rollers have been processed. Reclaimed flux is oven-dried, screened, and re-used. The water tank can be removed from under the head easily so that the machine can be used for other work.

Longhorn has used the same technique to hardsurface a roller as many as six or seven times. After a second build-up, bushings are replaced. New pins usually are required after the third or fourth build-up. Another advantage of the technique, which has been used before for manual hardsurfacing jobs, is that it eliminates the necessity for honing out the inside of the roller to replace the bushing assembly, should it be removed for inspection.

continued on next page



GAGES in kit (circle) enable students to diagnose trouble that is made to order by a series of dampers and valves built into dynamometer-mounted Detroit Diesel engine.



VALVE stops flow through "faulty" oil cooler, temperature builds up.



DAMPER on blower cuts cylinder air intake as dirty air cleaner would.

Test Engines Simulate Common Field Troubles

DYNAMOMETER - MOUNTED test engines equipped with power-robbing devices to simulate conditions that would cause down-time in the field have been developed by Detroit Diesel for its mobile training programs.

Installed on three-cylinder, two-cycle engines, the devices are a series of damper and valve attachments that increase or hinder the passage of air, fuel oil, lubricating oil, and exhaust gases through vital engine parts.

A damper in the exhaust piping, for instance, restricts the normal escape of exhaust gases. When the damper is closed, the trainee sees first hand the conditions that might develop in the field as a result of a defective muffler or improper exhaust piping. Another device, a valve built into the governor housing, obstructs a small opening through

which crankcase ventilation normally takes place. The resulting build up of crankcase pressure simulates a condition that could be caused by dirt or sludge collecting in the vent opening.

In sessions at a job site or at a distributor's shop, the dynamometer reveals the loss of power caused by any one of these devices. After class instruction, students are given a diagnosis kit that enables them to determine what is "wrong" with an engine.

The kit includes two pressure gages with readings of 0 to 100 and 0 to 15 lb; a magnahelic gage for taking sensitive vacuum or pressure readings; a tachometer and extension drive; a dial indicator for measuring crankshaft end play; and compression gages for Detroit Diesel's 71 and 110 engines

When connected to the various



PETCOCK admits air to fuel lines, disrupts normal air-to-fuel ratio.

parts of the engine, this equipment helps students find the source of trouble. They are taught the proper way to prevent or correct the condition simulated by the testing devices.

The dynamometer equipment, usually restricted to permanent factory training courses, has been used by over 400 trainees. In the 9 yr the Detroit Diesel Div. of General Motors has offered mobile courses more than 35,000 students have received instruction at locations near their jobs.

Factory training programs are held at Detroit Diesel's plant and at training centers at Atlanta, Denver, and San Leandro, Cal.





The Hancock Elevating Scraper has the features to give you lowest-cost-per-yard of earth moved. With the elevator continually removing the dirt from around the cutting blade and distributing it evenly throughout the scraper, you get a balanced load at all times. The Hancock 11 Yard Elevating Scraper is hydraulically controlled, works efficiently with any troctor of 60 horsepower or over, and turns in only 28 feet.

HANCOCK MANUFACTURING CO

PO3-8297 Lubbock, Texas

Patents Pending



of earth moved.

These HANCOCK features mean





FIFTH WHEEL — Extreme WHEELS — Scraper has SPREADING UNIT—Delayed GEARBOX and ELEVATOR REAR AXLE flexibility and simple adjust— heavy-duty wheels, standard dumping of the front bucket — Heavy duty elevator frame rugged rear ment result from ball join industrial tires and standard permits controlled release is combined with a strong, tion provides type fifth-wheel. wheel bearings.









Aluminum dump bodies add two tons a trip, \$6,240 a year profit

Every extra ton of uranium ore is extra insurance for America's future security and growth. G & C Truck Lines, of Riverton, Wyoming, is able to haul two more tons of ore every trip, thanks to weight-saving aluminum.

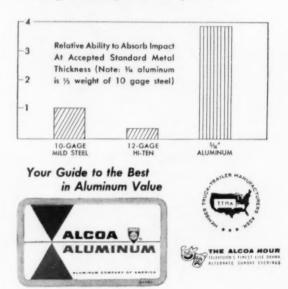
Extra payload means extra profit. The truck operator is paid 7¢ per ton-mile. Figuring two trips a day, five days a week, 52 weeks a year, the extra ore hauled earns an additional \$6,240 a year. This pays for the small premium for aluminum in $3\frac{1}{2}$ months. After that, it's pure gravy!

The uranium ore is hauled 86 miles. Fortysix miles are over unimproved dirt roads that are washboard rough. For this tough service, G & C also chose round, balanced, true-running Alcaa® Aluminum Forged Disc Wheels.

Williamsen Body and Equipment Company builds aluminum dump bodies for trucks and trailers. Designed with Alcoa Aluminum alloy these bodies have three times the impact resistance of steel at half the weight.

Other manufacturers also build dump bodies of Alcoa Aluminum to make hauling more

profitable for you. Get their names and FREE Dump Body folder by writing today to Aluminum Company of America, 1879-H Alcoa Building, Pittsburgh 19, Pennsylvania.



Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

Distributors

Bucyrus-Erie Co.: The company announces two new distributors. Pit & Quarry Equipment Co. of Indianapolis, Ind., is to cover northern and central Indiana, and Chapman Binder Machinery Co. of Union, N. J., will handle northern New Jersey and one county in New York.

Manitowoc Engineering Corp.: Carrier Engineering Co. of Fort Lauderdale, Fla., has been appointed distributor for southern Florida. Carrier will handle the complete line of Manitowoc cranes and shovels.

Koehring Co.: The Action Equipment Co. of Stockton, Calif., is now handling sales and service of Koehring, Parsons, and Kwik-Mix products. Kwik-Mix division has another new distributor in Pacific Builders Supply Co. of Portland, Ore.

Baldwin-Lima-Hamilton Corp.: The following seven distributor appointments are announced by the construction equipment division: Peterson Machinery Co. of Knoxville Tenn.; Linder Industrial Machinery Co. of Lakeland, Fla.; Highway Equipment and Supply Co. of Orlando, Fla.; Shasta Truck & Equipment Sales, of Redding, Calif.; Werckle Construction Equipment Co. of Rockford, Ill.; Western Contractors Supply Co. of Melrose Park, Ill.; and Caprock Machinery Co. of Amarillo, Tex.

Four Wheel Drive Auto Co.: The company has appointed four new distributors: General Truck & Equipment Inc. of St. Paul, Minn.; Humphrey Truck Sales of Milwaukee, Wis.; Midwestern Engine and Equipment Co. of Tulsa, Okla; and Burg & O'Conner Motors of Clintonville, Wis, The





Get the jump on competition with FLECO Land Clearing Equipment

Now, more than ever before, you need FLECO equipment to get the jobs and make money on the road-building and farm watershed programs. With the right Fleco product you can beat competition—underbid him, do a better job, finish up sooner, have lower costs, get more repeat business.

Whatever your land clearing problem, there's Fleco equipment designed specifically for it: rocks, stumps, brush, trees, undergrowth, roots. A wide selection of Fleco equipment is available to increase the capacity of all sizes of Cat Diesel Tractors from the D2 to the D9, as well as other crawlers.

Your Fleco-Caterpillar Dealer will be glad to recommend the equipment you need for your tractor and for your specific work. He can show you how others with similar needs have cut their costs and stepped up production with Fleco equipment. See him soon!



Fleco Treedozer gives tractor powerful leverage, digging action for pushing out big trees.



Fleco Rock Rake steps up clearing, raking, stacking capacity of crawler. Quickly interchangeable with dozer blade.



Fleco Heavy-Duty Cab Guard protects operator from limbs and falling trees. Boosts efficiency. Standard Cab Guard also available.

SALES AND SERVICE ...

continued

Vivian Equipment Co., present western Iowa distributor, announces a new sales office in Sioux City.

On the Sales Front

Food Machinery and Chemical Corp.: Everett W. Lundy has been promoted to general sales manager of the Peerless Pump Division to succeed B. A. Tucker, who has retired.

Twin Disc Clutch Co.: E. B. Falk is now manager advertising and sales promotion. Falk, a mechanical engineer, joined the company in 1946 and has held several engineering and sales posts.

Goodman Mfg. Co.: James Hart has been appointed district sales manager of the Diamond Iron Works Division. His district will include the states of Arkansas, Louisiana, Texas, Oklahoma, New Mexico, and Arizona. David R. Freeberg is the new district sales manager for Ohio, Indiana, eastern Missouri, Illinois, Wisconsin, Michigan, and eastern Ontario.

Yale & Towne Mfg. Co.: Eben C. Hall is now the New York manager of the Yale Materials Handling Division's export department.

In the Main Office

The Frank G. Hough Co.: Five promotions have been announced: In the engineering section, Jules C. Laegeler, formerly manager of product imprevement, has been named chief engineer of the company, and T. G. Granryd becomes manager of the product improvement department. In the financial section. Robert L. Smith becomes secretary and treasurer; Fenton O. Richards, controller; and Frank M. Docauer, assistant secretary.

Koehring Co.: A. L. Dassler has been promoted from assistant chief engineer to chief engineer of the Koehring division. Dassler, who started with Koehring in 1935 as a blueprint boy, will supervise design of the complete line of shovels, hoes, draglines, and cranes.

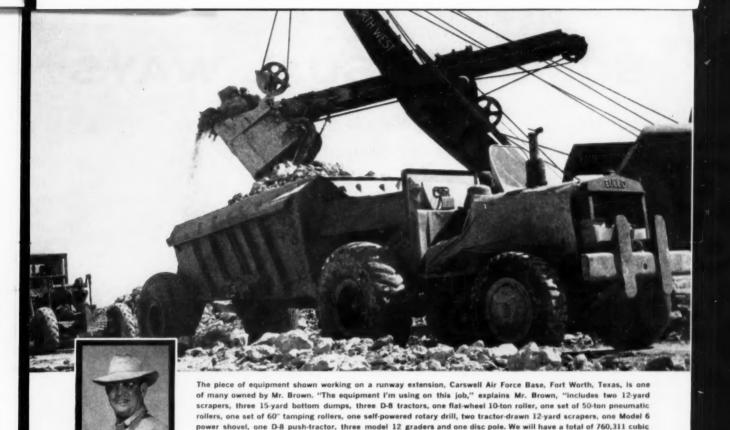
Bucyrus-Erie Co.: Robert G. Allen has joined the company as a

FLECO

Jacksonville, Florida

ROCK, ROOT & BRUSH RAKES
TREE CUTTERS · UNDERCUTTERS
CAB GUARDS · ROOT CUTTERS
DETACHABLE & PULL STUMPERS
TREEDOZERS · ROLLING CHOPPERS
MEAVY-DUTY TOOL BARS





Mr. James G. Brown, Contractor, Austin, Texas, says,

yards of earth to move on this job, of which we have moved 512,000 yards."

"Subtract a pound of dead weight from an earthmover and add a pound of dirt...that's why I'm in favor of USS HIGH STRENGTH STEELS!"

Mr. Brown has been in the construction business since 1932 and has bought machinery, including earthmovers, scrapers and tractors, for the past nine years. At the present time he owns \$375,000 worth of construction equipment. He has a lot to say about increased payload and "built-in" durability, both obtainable through the use of USS High Strength Steels.

"Modern machines are obviously superior to the units I first used," says Mr. Brown. "We produce 30% more work with the same equipment as compared to the machines of ten years ago. My average unit will work about 3000 hours per year, operating at top speed, hauling heavy loads of

12 to 15 vards-usually overloadsas far as 12 miles over rough, rugged country. Since we drive faster with heavier loads, our equipment is subjected to far more serious shocks and stresses than we had in the past. While parts must be stronger than they were, the machine's components must be lighter in weight to permit these heavier loads. Despite the higher speeds, overloading and more work, our maintenance and down time is far less than it was ten years ago. The increased duty factor and the ability to haul greater payloads are two reasons why I'm definitely in favor of the use of high strength, weight-saving steels like USS High Strength Steels."

Design Manual

Our "Design Manual for High Strength Steels" contains comprehensive and practical information that you will find extremely useful in designing your product for greater economy and efficiency by the sound use of high strength steels.

For your free copy, write on your company letterhead, giving your title or department, to United States Steel Corporation, Room 2801, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

Also available from U. S. Steel: USS "T-1" Steel, a constructional alloy steel combining very high yield strength with toughness and weldability.

UNITED STATES STEEL CORPORATION, PITTSBURGH. - AMERICAN STEEL & WIRE DIVISION, CLEVELAND. - COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH. - TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. - UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS HIGH STRENGTH STEELS

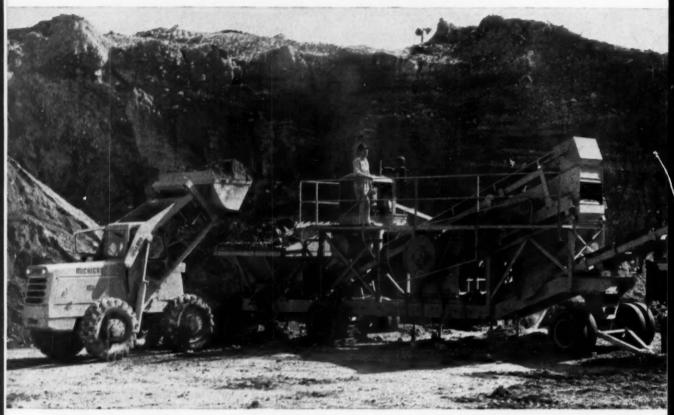
USS COR-TEN . USS MAN-TEN . USS TRI-TEN "E"



(Advertisement)

SOME UNUSUAL WAYS

Michigan Tractor Shovels are saving time and money for road builders around the country



Feeds portable crusher—Making good use of its high lift, Michigan Model 125A digs and dumps raw bank gravel into hopper of 100-ton-per-hour base material plant. Photo comes from Southern Hills Inc. pit near Dayton, Ohio, where the 2 yd Michigan did the work of a more expensive, less versatile, far less mobile excavator-crane.

Grades shoulders—Special side bucket attached to Michigan 175A grades 3 ft shoulder next to newly-poured slab. Unique rig does jobs not possible with grader drop-blade. . . including filling holes, distributing gravel, removing spoil. Attachment, designed by Villa Contracting Co, is helping widen 27 mi of N.J. Garden State Parkway.

Pours concrete—Hauling concrete in Michigan Tractor Shovel bucket, Slattery Rock Corp. solves problem of laying 6 lanes of New York's Deegan Expressway under low viaduct. Two of these maneuverable "buggies" needed only 4 hours, 200 to 250 trips to pour 800 ft of each 12 ft lane.







Carries pipe—One of Peter Kiewit's Michigans serves as allaround handyman on company's Indiana Turnpike contract. This 102 hp model lifts up to 11,000 lbs, carries, 5,500 lbs at 4 mph. Note excellent all-around visibility given operator.



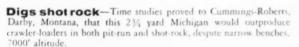
Breaks, loads asphalt—Before resurfacing street in Worcester, Mass., Contractor Charles. Chaffee uses 1¼ yd Michigan to strip old asphalt. No "ramming" is required powerful breakout quickly shatters paving.



Cleans pavement—Highway must stay open said Nashville officials, so Wright & Lopez do cleanup with small, agile 16 cu ft Michigan. Only 4'2" wide, 10'8" long, unit works rapidly, doesn't block traffic, doesn't damage newly-set pavement.



Removes sewer cover — When other big loaders failed, Kirby-Etwood's 133 hp Michigan succeeded in prying off this 2-ton concrete cover. Assignment was part of cleanup before widening Los Angeles freeway.











... WORLD'S LONGEST LINE OF WELDERS

Here's the List --



A-C Transformer Type
in 16 models from 20 to 800 amperes

A-C Submerged Arc Type 3 models, 150 to 1875 amperes

D-C Selenium Rectifier Type 12 models, 3 to 1500 amperes

D-C Selenium Rectifier Constant Potential Type 3 models, 300 to 1000 amperes

A-C/D-C Combinations for Metallic Arc Welding

6 models, 10 to 525 omperes

Spotwelders 14 models, 1.5 to 20 KVA

A-C and D-C Engine Driven Welders/Power Plants 6 models, 15 to 350 amperes



A-C/D-C Combinations for Inert Gas/Metallic Arc Welding 8 models, 10 to 550 amperes

A-C Inert Gas Welders

23 models, 5 to 700 amperes

High Frequency Units 9 models, up to 1000 ampere capacity

High Frequency Units with Water/Gas Controls 8 models, up to 1000 ampere capacity

PLUS: control panels, remote control units, water coolant systems, electrodes, electrode holders, running gear and welding accessories.

What's more, "... if it's Miller you know it's the finest ..."

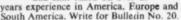
ELECTRIC MANUFACTURING CO., INC.

Distributed in Canada by Canadian Liquid Air Co., Ltd. Montreal, P.Q.



MAYO ALL-STEEL SINKING FRAMES and HEAD FRAMES

Safe — Dependable — Designed right for the job. For your operation, depend on Mayo methods and skill based on over 25







TUNNEL AND MINE EQUIPMENT LANCASTER, PENNSYLVANIA





SALES AND SERVICE . . .

continued

vice-president. He has held executive positions with several industrial firms and has served two terms in Congress, representing Pennsylvania's 28th district. He is a graduate of Harvard University and of an advanced course at Harvard's business school.

Associations

Perlite Institute, N. Y.: Two administration changes are announced by Perlite Institute, the international association of miners and processors of perlite. fireproof concrete aggregate and soil conditioner. Richard J. O'Heir has been promoted from technical director to secretary-treasurer. David W. Gesler has joined the Institute as its new advertising and promotion director.

American Road Builders' Association: This association now has 26 active technical committees studying problems of various phases of road building. Four of the newest committees are: airport pavements, electronic computers, flexible type pavement, and photogrammetry. For details of all ARBA committee activities write direct to the Association at World Center Building, Washington 6, D. C.

Special Mention

Crown Manufacturing Co.: Crown is a new company producing a complete line of self-priming centrifugal, diaphragm, electric-powered, and high-pressure pumps, ranging in size from 1-10 in. For complete information on dealers and distributors, write the company direct at Box 545, Waterloo, Iowa.

Allis-Chalmers Co.: The company has opened a Chicago retail branch to handle sales and service of its fork lift trucks, industrial tractors, and platform trucks. The branch is located at 4400 Archer Ave., and F. C. Dewey is branch manager.

Brunner & Lay, Inc.: A new plant under general manager E. A. Bowman has been opened in Montreal, Canada. This plant will manufacture Rok-Bits, a complete line of pneumatic tool accessories, and drill steels.



This 25-ton truck crane travels without permit

New Michigan strips to 41,500 lbs. gvw



1+ Every truck crane user has the problem of meeting highway weight limits, whether he drives over superhighways, or country roads.



2 To prepare this crane (a new MICHIGAN Model T-24) for weighing, all that had to be done was remove counterweight and rear outrigger under power, then un-pin boom.



Rear tandem axle weighs in at 32,000 lbs. ... front axle, 9,500 lbs. Total gross, 41,500 lbs., is well within highway weight limits.



4 After noting overall width of under 8 feet, the "go" signal is flashed (left) and the MICHIGAN Model T-24 truck crane moves off the scale and is on its way without delay.

Michigan is a registered trade mark of

CLARK® EQUIPMENT

Write for details on performance, price and delivery

CLARK EQUIPMENT COMPANY, Construction Machinery Division 2403 PIPESTONE ROAD, BENTON HARBOR 37, MICHIGAN

Construction Equipment News . . .

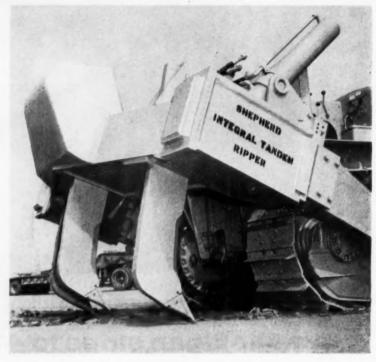


Batches Quickly

Cement and aggregates are batched at the same time with Noble's new 240-ton capacity plant. Because of its series of multiple scales, the plant delivers 7-yd batches every 150 sec. Aggregate bins have from two to six compartments and cement storage varies from 1,200 to 2,500 cuft. The plant can be automatically or semi-automatically controlled.—Noble Co., 1860 7th St., Oakland, Cal.

Grader-Compactor

The Graderoll is an easily-installed attachment that converts any tandem-drive motor grader into a pneumatic compactor. Effective compaction weight on each of the Graderoll's six tires, when installed on a 23,000-lb grader, is 1,536 lb. It attaches to the grader frame and down pressure comes from two hydraulic rams. Blade operations are not affected. — Midland Mfg. Co., Huntington National Bank Bldg., Columbus, O.



D9 Ripper Pushed by Another D9

When a single tooth is used in tough rock, the giant Shepherd ripper exerts 105,000 lb of down pressure and 160,000 lb of ripping pressure on a single 4%-in. point. The 20,000 lb, hydraulically controlled ripper mounts on a Caterpillar D9 crawler that is pushed by another D9. The ripper also can handle three 3½x14-in. shanks. Maximum penetration is 36 in.—Shepherd Machinery Co., Box 6789 E. Los Angeles, Cal.





Keeps Out Weather, Admits Light

Herculite F36 Clear is a mesh-reinforced vinyl plastic sheeting that protects working areas, yet admits light. Water, rot, mildew, and fire-proof, the laminated material is lightweight, easy to erect or take down, and takes little storage space.—Herculite Protective Fabrics, 146 Little St., Belleville, N.J.



Truck Goes Anywhere

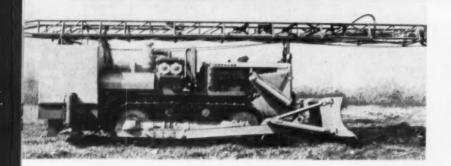
Crossing a ditch on two telephone poles, inventor William Albee demonstrates his wheel-less truck. Traveling on six-low-pressure rubber bags, it can cross swamps, climb 80-deg grades in soft sand, and roll over rocks. Its capacity is seven tons.—Albee Rolligon Mfg. Corp., Monterey, Cal.



Loader-Compactor

Steel pad compaction wheels, each 24 in. wide, 64 in. in dia, and weighing 4,200 lb, are now available for the four-wheel-drive, four-wheel-steer LD8A Scoopmobile. The compaction wheels bring the weight of the loaded unit to 50,000 lb, which is spread evenly over the four wheels. Compaction wheels are interchangeable with rubber-tired wheels. The 3yd Scoopmobile features a torque converter, power shifting, power steering, and two-axle oscillation as standard.-Mixermobile Maufacturers, Inc., 8027 N.E. Killingsworth St., Portland, Ore.

continued on next page



Versatile Rotary

Davey's M-8RA rotary air drill creates up to 35,000 lb down pressure, digs 10-in. blast holes. It is designed for the Cat D8 and other tractors of comparable size. The drill uses compressed air to clean out drilled holes, and it makes a highly efficient air core drill. The tractor engine supplies power through a chain and gear power transfer case.—Davey Compressor Co., Kent, O.

Raises Quickly

Rogers' detachable gooseneck trailer mounts a hydraulic ram that raises or lowers the frame more quickly than ever before. The trailer can move with the frame in the elevated position when ground clearance is needed, and it can be lowered to pass under overhead obstructions. One lever handles all operations. Many sizes are available.—Rogers Brothers Corp., Albion, Pa.



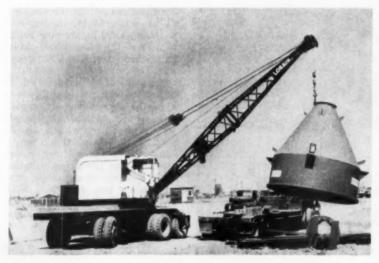
Telescopic Boom

The 360 Hydro-Scopic Hopto excavator features a hydraulically operated telescopic boom and a bucket tilt mechanism. Mounted over eight wheels on a rugged carrier, the Hopto has a digging depth of 20 ft and a loading height of 19 ft. Buckets and attachments feature "snap-on" adaptors that permit the operator to change tools from the cab.—Badger Machine Co., Winona, Minn.



Thew's Latest Crane

The 25-ton self-propelled Lorain SP-425 crane, mounted on a 6x4 carrier, features Thew's Shear-Ball mounting that eliminates turntable rollers, center pins, and centering gudgeons. Its 30-ft pinconnected boom incorporates Thew's square-tubular-chord design. Lorain's air-operated, two-lever, Joy Stick controls handle all turntable operations.—Thew Shovel Co., Lorain, O.



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Make their jobs worth more to them... with Hartford group insurance

(Now for firms with as few as 10 employees)

attract and keep better people...reduce

costly turnover...help increase your

You needn't be "big business" to offer present and potential employees the attractive "fringe benefits" of group insurance.

Even if you have as few as 10 to 24 employees* you can now take advantage of Hartford group insurance plans—with the same kind of benefits formerly available only to larger companies. Benefits that boost employee morale...

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organization's productivity—and profit!

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Hartford group insurance plans for small business provide for the following benefits in any combination you choose: payment of hospital room and board expenses...miscellaneous hospital expenses...doctor's fees for hospital visits...surgical expenses...maternity

care expenses...major medical expenses ...weekly income for disabilities resulting from accidents and sicknesses.

Both you and your employees stand to benefit by Hartford group insurance. Call your Hartford Accident and Indemnity Company Agent or an insurance broker for details. Or fill in and mail coupon.

Year in and year out you'll do well with the

Hartford Fire Insurance Company Group

Hartford Fire Insurance Company Hartford Accident and Indemnity Company Hartford Live Stock Insurance Company Citizens Insurance Company of New Jersey New York Underwriters Insurance Company New York 38, New York

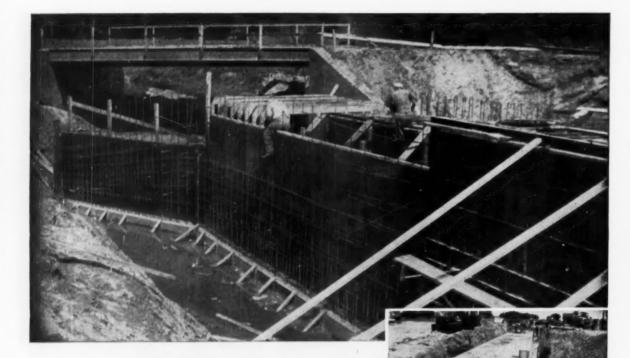
Northwestern Fire and Marine Insurance Company

Twin City Fire Insurance Company
Minneapolis 2, Minnesota

Hartford Accident and Indemnity Company Hartford 15, Conn. Dept. AM-8

Please send us more information on how we can protect our employees with Hartford's new group insurance plans.

August 1957 — CONSTRUCTION METHODS and Equipment — Page 211



forming Bridges, Culverts, Piers?

UNI-FORM PANELS

Save LABOR, MATERIAL, TIME!

Simple mechanical assembly and pre-engineered techniques for handling virtually any forming condition make UNI-FORM Panels your best bet for fast, low cost forming. Successful contractors everywhere are using the UNI-FORM system to form bridges, overpasses, culverts, piers and abutments, because their experience has shown that UNI-FORM Panels give them the speed, flexibility and economy required to handle this complex type of forming at the lowest possible cost.

Let us prove our point. Send a set of plans for detailed forming specifications, recommendations and cost analysis. There's no obligation, of course.

P1501

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Concrete Form Specialists Since 1912

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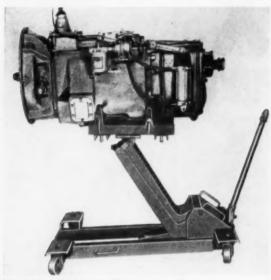
Here Are The Basic Elements:



4 2. UNI-FORM

4 3. UNI-FORM Tie Key

 Steel framed, plywood faced UNI-FORM Panel



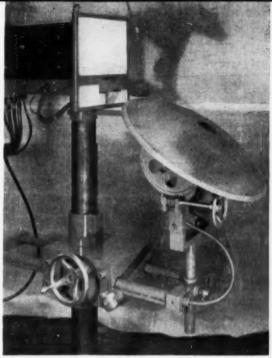
Handles Heavy Components

Ausco's jack for handling heavy-duty hydraulic transmissions, differentials, and front or rear-axle units has a rated capacity of 2,000 lb. Completely adjustable, it can be tilted 51½ deg front-to-back and it can be raised from 6¾ in. Four big caster wheels allow it to be positioned or dollied easily while carrying a capacity load. The jack, called the model D-8200, weighs 208 lb complete. Power unit is removable for servicing.—Auto Specialties Mfg. Co., St. Joseph, Mich.



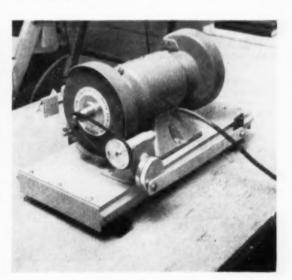
Makes Tire Bead Breaking Easy

The O.K. bead breaker handles tire sizes from 7.00-20 through 30.00-33, yet it is so simple to operate that a beginner can use it safely. Self-contained and compact, the breaker fits in hard-to-reach places. A crescent wrench turns the tool's plunger to force the bead from the rim.—O.K. Service Supply Co., 5150 S. Santa Fe Drive, Littleton, Colo.



Hardfaces Thin-Shell Parts

A machine that automatically hard-surfaces discs, grader blades, and similar thin-shell parts uses a unique light-temperature response system to control pre-heating, weld-heating, and post-heating. Wire is fed through an oscillating feeder that wipes the rod against the work to break up scale and oxides and to keep the puddle clean while a uniform deposit is applied. Stick electrodes also can be used.—L and B Welding Equipment, Inc., 2424 6th St., Berkeley 2, Cal.



Adds Accuracy to Grinders

Precision tool grinding is made easier when a new oscillating bese is attached to any standard bench grinder. Called the Tru-Grind, the base carries the grinder through a controlled stroke while the tool is held in place in a steady-rest. A belt drive connects base and grinder shaft.—Graybill Industries, Inc., Spokane, Wash.

continued on page 215



A MIXER with a new design concept, introduced to this country for the first time by the T. L. Smith Co., operates six times as fast as conventional units, yet mixes so thoroughly that it actually homogenizes materials. Another advantage of the mixer is that it can fit into areas with limited headroom. The 1½-yd model, largest in the line, has an overall height of only 59 in.

T. L. Smith Co. has entered into a license agreement with the Swedish inventor, Erik Fejmert, for the exclusive manufacturing and distribution rights in this country.

Called the Smith turbine-type mixer, it has a doughnut shaped drum with a drive motor located in the center. This drum shape is said to give a continuous live mix, eliminating the usual dead spots in the center of the mixing area.

Blades are positioned so that they braid material at the rate of 9-ft per sec. This fast blade speed, together with the high peripheral speed of the entire mixing area, results in a fast and thorough mix that means a strong concrete.

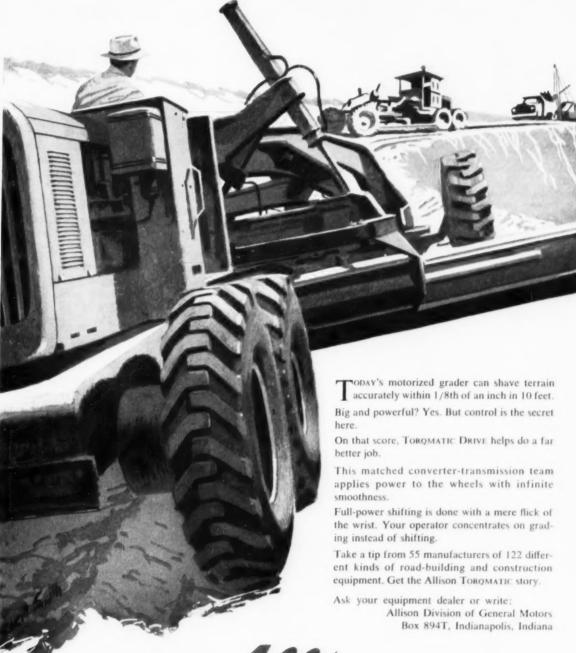
Charging and unloading are also said to be easily performed. The entire top of the mixing drum is open and direct charging is possible from any angle. Discharge is accomplished by opening a semi-circular door at the bottom. The mixer will be manufactured in ½, 1, and 1½-yd sizes, with the total weight of the 1½-yd model being 7,750 lb.

Basically it is a stationary type mixer, but it does have a lifting hook so that it can be handled by a crane and it can be transported on a monorail. In this case, the mixer becomes its own bucket and mixes while transporting the batch to the pouring site.

The manufacturer claims the new mixer is ideally suited for prestress and precast concrete op-



TORQMATIC grader gives a straight razor finish



NO. 5 IN A SERIES ON SPEEDING AMERICA'S ROAD-BUILDING PROGRAM



Allison

TORQMATIC DRIVES

Bonus Quality Bonus you money

This Bucyrus-Erie 1 $\frac{1}{2}$ -yd. 38-B shovel loads rock at the base of Mt. Franklin in El Paso, Tex. It is owned by Standard Aggregates Co., El Paso.



Bonus Quality
Many gears, pinions, driving tumblers, shaftings, and other parts that go into Bucyrus-Eries are heat-treated in electric furnaces for specified degrees of toughness and hardness. The steel castings are poured in Bucyrus-Erie's own furnaces so they can be held to highest standards at every stage of development.

Bucyrus-Eries Keep Things Moving on Major Highway Jobs

On highway projects in state after state Bucyrus-Eries are the backbone of the machinery fleet. When the going gets rough, when machine maintenance becomes a problem, Bucyrus-Eries furnish the necessary dependability to keep things moving at a steady clip.

Many of their steel parts, for instance, are cast in Bucyrus-Erie's own foundries under rigid quality control; this accounts for the ruggedness that minimizes maintenance time. Fewer working parts combined through superior design enable Bucyrus-Eries to deliver highest output week in and week out.

These moneymakers are available in a complete line of crawler-mounted models from $\frac{3}{8}$ to 4 cubic yards (including the new 1-yd. 30-B) and in rubber tired carrier mounted Transit Cranes in 15-, 25-, and 35-ton capacity. Models through 4 cu. yds. are readily convertible to crane, clamshell, and dragline, plus dragshovel on machines through $2\frac{1}{2}$ cu. yds. For lighter crane work, there are 5-ton and 10-ton capacity Hydrocranes.

Your Bucyrus-Erie distributor will be glad to give you information on the size machine that fits your requirements. See him today.



South Milwaukee Wisconsin



In construction of the Boston Southeast Expressway, this Bucyrus-Erie 3-yd. 71-B shovel loads trucks with granite, rock and dirt. Marinucci Bros. & Co., Inc., Boston, is-the owner of this machine.



P. T. & L. Construction Co., Paramus, N. J., used this Bucyrus-Erle 2-yd. 51-B shovel to cut down high ground for fill to be used for the Garden State Parkway in New Jersey.

erations where concrete must have extreme high strength. The mixer is virtually vibrationless and requires no special installation.—T. L. Smith Co., 2835 N. 32nd St., Milwaukee 1, Wis.



PORTABLE SHACK-A factorybuilt shack-on-wheels, designed as a field office, tool shed, or workshop is available as a package from Economy Buildings, Inc. The building, measuring 71/2 x16-ft, is built of tongue-andgroove lumber and mounted on a heavy-duty steel undercarriage. The trailer is equipped with electric brakes controlled from the hauling vehicle. The building comes with all sash, a door, hardware, and painted exterior. Ready to roll, it costs \$795, fob, West Chicago. A model without the trailer is available. - Economy Buildings, Inc., W. Chicago, Ill.



NEW ROTARIES-Gardner-Denver Co. has added two new models -the RP125 and the RP365 (above)-to its line of rotary compressors. Like previous Gardner-Denver models, the new units retain a clutch between the engine and the compressor. Warm engine water circulates through the compressor oil cooler and the reservoir almost immediately so that warm, free-flowing oil is supplied to the compressor as soon as it starts turning. Both units have an oil pump to assure a positive flow, independent of receiver pressure, under all operating conditions. Both compressors are water cooled. To facilitate main-

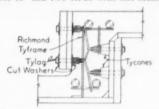


Memorial Stadium, home grounds of Baltimore Orioles, prior to pouring of upper deck stands behind home plate. Stadium contractors: Deluca & Davis — Contractors for addition: Joseph F. Hughes & Co.

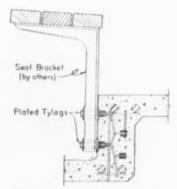
Two birds with one stone

20,000 Richmond Tyframes do double duty in Orioles' stadium

When the American League Orioles needed a larger nest, the seating capacity of Baltimore's Memorial Stadium had to be expanded. By using Richmond Tyframes in the building of additional stands, the contractors were able to "kill two birds with one stone":



FIRST the Tyframes held the riser forms rigidly in place, without need for raking timbers or other external bracing;



LATER the Tyframes provided anchorage for the seat brackets, which were bolted to the Tyframes by means of Plated Tylag Bolts.

This same Richmond Tyframe method was used in construction of the original stands. Standard Richmond Tyframes come in two varieties—either four coils welded to a trusslike arrangement of wire struts; or Tyloops—sometimes with Tyscrus—welded to a strong vertical support member. Each has a leg at the front face extending to the soffit to support the riser form. Sloping-Slab type Tyframes—two bent Tyscrus welded to a wire truss that exactly positions the coils and supports the riser forms—are used when the underside of the stands is sloping rather than stepped.

Richmond Tyframes with seat brackets applied to concrete block have been load-tested to 10,640 lbs. and 13,610 lbs.—we'll gladly send you the test data on request. Tyframes are used for many kinds of concrete construction besides stadiums—curbing, stair risers, balconies, gymnasium seating and such special work as supporting fascia beam forms above a monolithically poured marquee or other projection.

Full technical de-

Full technical details of Richmond Tyframes are given in the new Richmond Handbook, which covers the complete line of Richmond-engineered tying devices,



anchorages and accessories—all designed to enable you to place concrete better, more quickly, and more economically. For your copy, write to: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y. or 315 So. Fourth St., St. Joseph, Mo.



This Jaeger 2PN pumps 10,200 gph through a 2" suction line — all the water a 2" hose can handle. With $2\frac{1}{2}$ " hose, it pumps 14,400 gph.

Big New Capacities in Jaeger Pumps

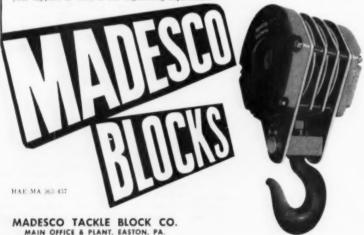
Tests of latest model Jaeger "Sure Prime" centrifugals, reproducing actual job conditions, establish new high capacities and performance never before guaranteed to users. For example, a light Model 3XP now pumps 19,500 gph at 10' static suction lift, the Jaeger 6P pump now has an actual performance exceeding 100,000 gph. Base your pump buying on latest information. Sizes 1½" to 10". See your Jaeger distributor or write for catalog.

THE JAEGER MACHINE CO., 800 Dublin Avenue, Columbus 16, Ohio COMPRESSORS • MIXERS • PAVING SPREADERS, FINISHERS



NOW . . . you really can work efficiently in close quarters. These specially designed MADESCO blocks carry loads from 5 to 50 tons, combine performance features developed through 30 years of specialized engineering for the construction field.

Available with plain or anti-friction bearings in hook, lubricated bronze or anti-friction bearings in sheaves, cast iron or steel side weights. Sheave diameters 14", 16", 18", 20", 24". For safe and speedy hoisting, nobody else offers you so wide a choice of blocks for every job. Consult your supplier or write to our engineering department.



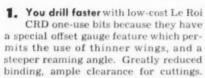
tenance, the compressor blades can be exposed by removing 12 cap screws. The RP125, available with either gasoline or diesel engine, is 10½ ft long, 4 2/3 ft wide and 5 ft high. The RP365, equipped with a diesel engine, is 10 ft long, 5 ft 7 in. wide, and 6 ft 5 in. high. It weighs 7,730 lb net.—Gardner-Denver Co., Quincy, III.



LIFT TRUCK-The new Henry Tractor-Lifts, designed for IHC and John Deere wheel and crawler tractors, cut materials handling costs by combining the advantages of a lift truck and a carrier that can move over rugged terrain. Three models are available: The TL-4316 features a three-rail mast with a 16-ft lifting height that telescopes to 93 in.: the TL-2310, also a three-rail hoist, goes up 10 ft and reduces to 64 in.; the TL-4210, with a tworail mast, has a 10-ft lift and reduces to 87 in. Each model offers three methods of mounting; they can be rear-mounted, rearmounted with the operator reversed to face the lifting operation, and front-mounted. Capacity when rear-mounted is 4,000 lb. Ground clearance is 12 in. Available attachments include a boom crane, dozer blade, concrete block tines, snow plow, cement hopper, personnel platform, and bulk materials bucket. Heat-treated alloy steel tines are available in 36 and 42-in. lengths.-Henry Mfg. Co., Inc., 1700 N. Clay St., Topeka, Kan.

continued on page 220





2. You have less drill-steel breakage with Le Roi CRD one-use bits. The method of bit attachment eliminates threads on the drill rod. And since a drill rod is only as strong as the root diameter of its threads, the tapered, threadless CRD's give you a stronger, power-saving union, and longer drill-steel life. Other savings result because you also reduce drill-steel handling, and reconditioning costs.

You have less wear and tear, too. Rifle bars, rifle nuts, and chucks will last longer because Le Roi CRD's are designed to reduce binding and ease strain on rotation parts of your drills.

4. They cost less, initially. CRD's cost less than 25¢, half as much as comparable multiple-use bits. There's a big saving in time and labor spent handling bits, too. CRD's knock-off, throwaway use eliminates unscrewing, and cuts out all of the time-consuming traffic between operator and bit-sharpening shop.

It costs practically nothing to try them. You don't need to invest in special threading or reconditioning equipment when you use Le Roi CRD one-use bits. Satisfy yourself that they can save you money. Get a can today, and start cutting your

drilling costs right away.

AT-77

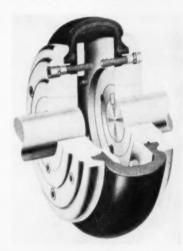


Wisconsin, manufacturers of Cleveland air fools, Tractair, portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.



SIMPLIFIES INSTALLATION— Elbow fittings that reduce the number of joints and fittings and simplify the installation of hose have been developed by Aeroquip Corp. Chief advantages of the new fittings are that they save space, do not restrict flow, and reduce the number of joints that might become points of leakage. The fittings are re-usable. Available in 45 and 90-deg configurations, the fittings are fabricated from formed tubing and are available with swivel nut ends. Mating adapters are also supplied

for straight gasket seals and pipe treads. They are designed for use with Aeroquip medium and high pressure hose. Both short and extended lengths are available.—Aeroquip Corp., Jackson, Mich.



NEW COUPLING-Para-flex, a new idea in flexible couplings, is the latest addition to Dodge Mfg. Corp.'s line of power transmission machinery. The couplings have the ability to handle angular misalignment, parallel misalignment, and end-float in any combination. The flexible member also cushions shock loads and diminishes vibration, according to the manufacturer. Heart of the coupling is a tube made with synthetic tension members bonded together in rubber. The four-way flexing body is said to operate with the simplicity and dependability of a modern tire. The coupling consists of the flexible tire clamped between two hubs that are mounted on the shafts to be coupled. The tire has a transverse split molded into it that permits easy installation and replacement without moving the driver or the driven machine. There is no metal to metal contact. Para-flex couplings in most popular transmission sizes are available in capacities up to 600 hp at 900 rpm.-Dodge Mfg. Corp., Mishawaka, Ind.

LIGHTWEIGHT 600—The LeRoi 600RD2, first in a new line of two-stage, sliding vane rotary air compressors, has an output of 600 cfm, yet weighs only 7,730 lb dry. It can turn in less than 12 ft. The compressor is coupled to a GM 6-71 diesel engine with a hy-



PRIME-MOVER M15A FOR BUILDING CONSTRUCTION Places 12 to 17 cu. yds. of concrete per hour on school, hospital and commercial projects — without extensive preparations for its use. Runs on same type of ramps, hoists and runways as hand carts. Available with flatbed, or 10 cu. ft. bucket.





PRIME-MOVER M30 FOR ENGINEERED CONSTRUCTION

Hauls 3/3 yard or 1-1/2 tons. Unloads transit mixers fast. Spots concrete right where it's needed on plant, warehouse, pier and bridge construction. Hydraulic Torque Converter Drive trees the operator from shifting, clutching and wasted effort. Rugged, dependable. Bucket and flat bed.

FOR COMPLETE DETAILS WRITE TO PRIME-MOVER CO., MUSCATINE, IOWA

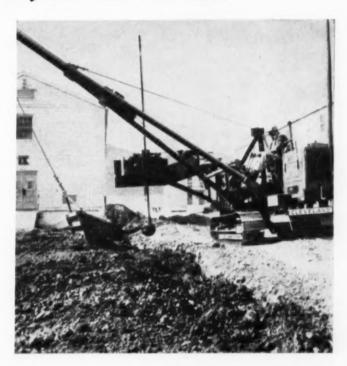
The CLEVELAND 80W replaces 6 men, 4 machines

... and does the job in half the time!

Don Rogers, superintendent of Charles Ramsey and Company of Fort Carson, Colo. has this to say about the performance of his new Cleveland Model 80W on a job of backfilling and compacting trench for the U.S. Army at Camp Carson:

"On this job, the 80W has replaced a large tractor, a 210 cu.ft. air compressor, two triple tampers and 6 men, and is doing the job in half the time."

"I'm paying this machine the supreme compliment of saying that it is the only machine I have ever seen that puts the dirt back in the ground as well as a Cleveland 140 trencher takes it out."



The CLEVELAND 80W

A SIDECRANE

- Lays Pipe 30,000 ft. lb. capacity
- Power Boom Up and Down
- 4 Line Speeds
- Long Reach 21 Feet
- · Sets Bends, Valves
- . Unloads Strings Pulls Sheathing, etc.

A BACKFILLER

- 41/2 Foot Scraper Board
- · Backfills Clean
- Backfills Fast 20 Passes Per Minute
- · Stays Off Completed Work
- Backfills from Either Side of Trench
- Works Safer Parallels Work

• Fits All Job Conditions

A TAMPER

- Fills and Tamps Simultaneously
- Meets Density Specifications
- Tamps From The Bottom Up
- Parallels Work No Straddling
- Tamps Wider Tamps Safer

ONE MACHINE...ONE OPERATOR...DOES IT ALL



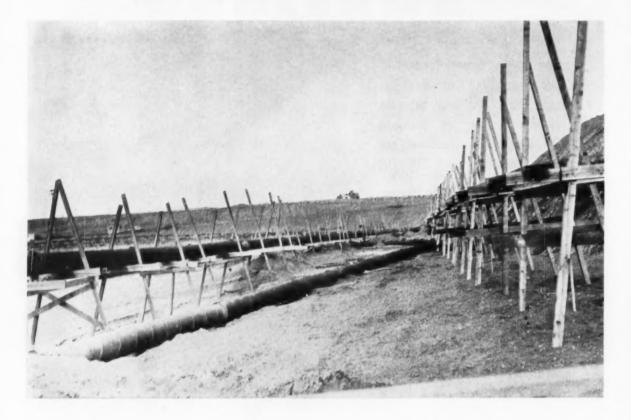


THE CLEVELAND TRENCHER COMPANY

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HAULS AND DELIVERS FILL



... Wherever You Want It!

When the job calls for hydraulic placement, you can depend on Naylor Spiralweld for the piping layout that will do the job-faster and at lower cost.

Naylor's exclusive spiral-lock structure creates the one lightweight pipe with the strength and safety required for the rough treatment involved in this service.

Its light weight simplifies handling. Installation is faster, too, with the one-piece Naylor Wedgelock coupling to speed connections. Lines can be knocked down, moved, and re-assembled in minimum time when you use this Naylor pipe and coupling combination.

For full details, write for Bulletins No. 507 on pipe and No. 513 on Wedgelock couplings.



1267 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office: 60 East 42nd St., New York 17, N. Y.



draulically activated clutch. An automatic variable capacity regulator and an automatic governor speed control are used to vary engine speed to match air demands. An important feature of the new compressor, according to the manufacturer, is its unit construction. A side-by-side arrangement of individually cast cylinders is said to provide compactness, ease of inspection, and good accessibility. Cylinders can be removed separately or with the gear drive as a complete unit. Each cylinder has double-row intake and exhaust portings. Rotors are supported on double-row ball bearings at the gear end and on roller bearings on the other end. An oil pump is driven off the high pressure rotor shaft. Oil is used for both lubricating and cooling. The engine and compressor are supported on a welded steel frame with a three-point suspension system. Automotive type steering, tapered roller wheel bearings, and 7.5-16 tires increase the unit's portability. Overall height is 71/2 ft, length is 121/2 ft, and the width is 6 2/3 ft. -LeRoi Div., Westinghouse Air Brake Co., Milwaukee, Wis.



DUAL PURPOSE DRILL—A selective action ¼-in. electric drill that combines both pneumatic-type impact action and regular drilling action has been developed by Power Tools Corp. Rated at 3 amps for continuous service, it will take up to 1-in. carbide ma-

STANDARD AND OPTIONAL EQUIPMENT

On Leading Diesel Trucks, Tractors & Stationary Engines

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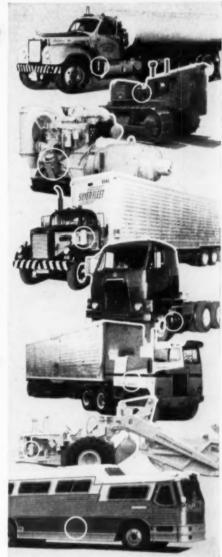
POWERFUL PROOF OF LUBER-FINER'S UNSURPASSED EFFICIENCY

Only Luber-finer Filters produce the patented filtering process that gives engineered protection to engine and oil as recommended by equipment manufacturers. The vital oil supply is circulated through Luber-finer's exclusive specially processed media which removes not only the injurious suspended solids from the oil but also the colloidal impurities which are often more damaging, thus increasing the life of both engine and oil.

THE EFFICIENCY OF LUBER-FINER'S PATENTED PROCESS HAS NEVER BEEN EQUALLED!

Luber-finer's patented filtering process adds thousands of miles to engine and oil life by cleaning oil faster and keeping it clean longer. Luber-finer gives more service and engineered protection than any other filter unit.

FOR EVERY TYPE OF ENGINE





INSIST ON GENUINE LUBER-FINER PACKS FOR EXCLUSIVE ENGINEERED PROTECTION

DIESELPAK — Designed expressly for use with H. D. detergent compounded oils. The Diese oak is unequalled in efficiency in removing impurities and contaminants without affecting the additives. (May also be used with fuel oil and straight mineral oil if desired).

REFINING PACK — Designed for use with straight mineral oils, fuel oils, hydraulic oils and inhibited industrial oils. The Refining Pack, combines ABsorbent with ADsorbent filtration, removes acids, moisture, suspended particles and colloidal impurities during its effective life more efficiently than any other filter and has been the standard of the industry since 1936.

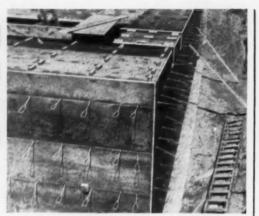
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LUBER-FINER, INC. 2514 S. Grand Ave., Los Angeles 7, Calif.

Walls and deck poured simultaneously with Gates

foundation forming partially completed, ready for erection of outside forms.

Job: Large animal hospital, Spokane, Washington Contractor: AAA Construction Company, Spokane



The walls on this animal hospital were formed quickly by laying the panels horizontally, and stacking to the desired height. No heavy backing, drilling, or other time-consuming panel fabrication was necessary. Since walls and floor deck were poured at the same time, the deck also provided partial bracing for the wall, eliminating the need for excessive walering.

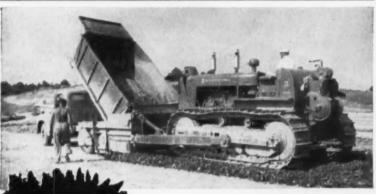
You get speed, economy and quality concrete, using Gates Panel Forming Systems. Gates precision-twisted, galvanized Form Ties provide maximum strength exactly where you need it.

for detailed information on how Gates can help YOU bid lower on your next job, see your nearby Gates dealer or write:



Gates & Sons. Inc.
80 South Galapago Denver 23, Colorado

CME-8/57



Owners report up to 1000 tons per hour with a Jersey Spreader! In conjunction with the propelling tractor, a Jersey Spreader is the FASTEST, ACCURATE PAVING Spreader in the World! . . . It is capable of spreading up to 5,000 tons of aggregate daily—easily and economically . . . It has been successfully used on such projects as: the New Jersey Turnpike, the Ohio Turnpike, the West Virginia Turnpike, the New York Thruway, the Garden State Parkway, Chrysler Tank Testing Bowl, many of the most important new airports and on large defense bases in Iceland, Newfoundland, Arabia and Africa.

Write now for complete information and illustrated literature.

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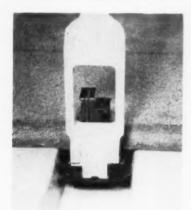
EQUIPMENT NEWS...continued

sonry drill bits. Drill speed is 1,700-rpm under load. The drill obtains impact action by means of two double cams and a 30-lb loaded spring. The first cam rides free on the motor shaft pressed against the second cam by the spring. A key is screwed in to a keyway slot on the first cam, preventing it from turning but permitting a 3/8-in. stroke. As the shaft rotates the second cam revolves against the fixed cam, causing a springreturn impact on each shaft revolution. A selector control on top of the drill turns to release the internal impact cam, allowing it to float for conventional drilling action. The unit weighs only 53/4 lb .- Power Tools Corp., Cleveland, O.



QUICK HEAT-Designed for use with tar kettles, asphalt trucks and other equipment that needs an abundance of quick clean heat, the new Wemco model TD-2 burner will deliver over 500,000 btu per hr, continuously. It can be operated on liquid LP or vapor LP gas. The burner incorporates the principle of liquid withdrawal from the gas cylinder to the burner. This withdrawal is regulated at 30 psi and vaporization takes place in a chamber in the burner. The unit is housed in a compact semi-steel casting.-Wemco Products, 1031 E. Ten Mile Rd., Royal Oak, Mich.

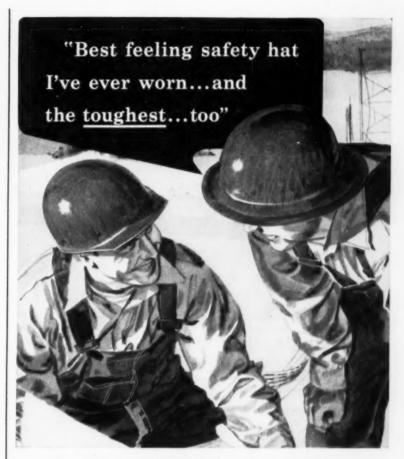
FASTENERS—A new line of non-piercing fasteners for attaching roof insulation to the various types of metal channel decks has been introduced by Geo. A. Tinnerman Corp. The fasteners, called Gat-Dek clips, provide a



good vapor varrier without the need for costly membranes, according to the manufacturer. The clips have sharp serrated teeth at each end of the foot element that grip the sides of the deck flute when the clip is driven into place with a simple tool (above) that is supplied by the manufacturer. The clip snaps into the tool, placed vertically against the edge of the insulation, and driven into the flute by hammer blows. The next section of insulation board is butted against the board already in place so that the edge is snug against the upright leg of the last preceding fastener. Since the fastener has opposing tabs, one clip serves as a common anchor. When in place, the fasteners resist 200 lb pull-out.-Geo. A. Tinnerman Corp., Cleveland, O.



TWO-SPEED PUMP—Greenlee's new high - pressure hydraulic power pump works at a continuous pressure of 6,000 psi, and can



for the very best in head protection, equip your men with WILLSON Super-Tough phenolic safety hats and caps APPROVED

Every day, more and more contractors across America are making sure their workers have maximum head protection by standardizing on the Willson Super-Tough phenolic safety hat. Scientifically designed to meet all specifications with ease, this is the strongest safety hat made . . . withstands 80 foot-pound dropball tests - 40 foot-pounds more than Federal Specifications. And coupled with this added measure of safety and durability is the extra comfort a worker enjoys when he wears the Willson Super-Tough phenolic safety hat. No wonder its popularity keeps growing so fast out on the job sites. But don't just take our word for it write today for name of your nearby Willson distributor and let him demonstrate the Willson phenolic on one of your jobs . . . see for sure why this is the very best head protection you can buy!



SIX STYLE CHOICES—The Willson Super-Tough phenolic line includes six styles: Three hats and three caps with choice of "Geodelic," Standard, or Lace-In suspension.

SIX COLOR CHOICES—The natural finish of Willson Super-Tough phenalic hats and caps is an attractive blend of neutral browns and tans. Also available inspray-coated red, white, yellow, green, or gray for specific job identification. (Other colors on special order.)

WILLSON

PRODUCTS DIVISION
RAY-O-VAC COMPANY

141 Thorn Street, Reading, Pennsylvania



* specially designed to cast huge

PRESTRESSED CONCRETE ROOF GIRDERS

for American Cyanamid's new phosphate storage warehouse

Working closely with Prestressed Concrete, Inc., Florida Division's Form-Crete engineering staff supplied special mass-production steel casting side forms to produce prestressed concrete griders for supporting the roof of American Cyanamid's new triple phosphate storage plant at Brewster, Florida.

This is a typical example of the capability of our Form-Crete consultant service in supplying custom designed and fabricated steel forms to meet your requirements for specialized projects.

Important as this service is, our main objective is the supplying of skill-fully designed and engineered steel poured-in place and semi-portable side forms for flat bed casting. Fabricated to order, there is a Form-Crete form for virtually every standard prestressed concrete product.

Investigate this highly profitable new market—the prestressed concrete product field with its unlimited applications...write, wire or phone today—get into the prestressed concrete business now with FORM-CRETE steel casting forms!



develop up to 10,000 psi intermittently. Called the No. 798-AC-SA, the pump is driven by a 3/4-hp, 115-230-v electric motor. It is also offered with a four-cycle gasoline engine. Models are available with a four-way valve for two-direction action. As the ram load increases on the two-speed pump, the ram automatically changes over to high pressure operation. Three-position controladvance, neutral, and return-is provided, with neutral holding the ram pressure and position while the motor is running. Valving provides high-pressure advance only and allows spring action, manual, or gravity return of the ram.-Greenlee Tool Co., Rockford, Ill.



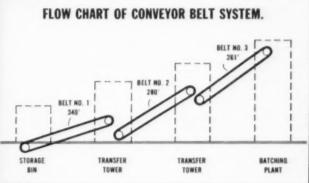
FINGER-TIP DRILL-Gardner-Denver's new Model JMT Mobiljumbo puts up to three heavyduty rock drills under the fingertip control of one operator. The self-propelled, crawler-mounted jumbo is furnished with two or three creep-free hydraulic booms and a wide variety of drills and feeds are available to suit ground conditions. The crawlers are powered with either a diesel-hydraulic drive or by five-cylinder radial air motors. An air motor drives the hydraulic pump that provides remote boom control. Drills can be positioned by one man. An air motor driven electric generator supplies three lights that flood the working face and the drilling operation .- Gardner-Denver Co., Quincy, Ill.

BIG SAW—Clipper's new 36-hp concrete saw features a one-piece frame that distributes weight properly and increases maneuverability. One man can lift, line up and saw. Constant weight over the blade during cutting prevents the blade from riding out of the cut when traveling at high speeds. Called the C-362, the saw uses a new rear-wheel drive system, called the DryTrac oilless transmission. The drive shaft that carries abrasive coated wheels is





Push-Button Control and U.S. Conveyor Belts help turn out 120 cu. yds. of concrete per hour



"This is the largest concrete plant of its type in the world," says the plant's manager. "In aiming to turn out the best concrete at the lowest possible cost we require a highly

View from the top of the batching plant, looking down Belt #3. The excellent troughability and perfect

alignment of this belt result from the use of Nylon

mechanized operation."

And that's what this plant has. Almost 2,000 feet of U.S. Rubber's 30" wide U.S. Matchless patented Style XN conveyor belting carries raw materials through the reclaiming tunnel, then up a steep grade to a turn head—electrically controlled—and finally discharges the cargo into the always-

hungry jaws of the huge batching plant.

One man in a control tower oversees the entire operation, from storage pits to plant bins. The control board tells him when a bin is getting low. By pressing a button he can start one of the three U. S. Belts hauling sand, stone, or other aggregates to the proper bin. "We expect many years' service from these belts," adds the plant's president, J. Roy "Cap'n" Pennell.

This is another good example of U. S. Rubber's Three-Way Engineering, in which "U. S." engineers work as a team with the plant engineers and the conveyor system engineers . . . to obtain the *right* belt for the job. This type of assistance, plus a complete line of conveyor belting, can be obtained at any of our 28 District Sales Offices, or contact us at Rockefeller Center, New York 20, New York.

In Canada, Dominion Rubber Co., Ltd.

*Greenville Concrete Co., Greenville, S. C.



Mechanical Goods Division

United States Rubber

HOW JIM GUENTHER DUG TWO BASEMENTS MILES APART IN 7 HOURS, 45 MINUTES

Ann Arbor, Michigan—Two basements in one day with a BAY CITY Model 30—½ yard hoe... that's the story told here by Guenther Brothers, excavating and grading contractors. "Differential steering with plenty of turning power", reported Jim Guenther, "makes maneuvering the machine around corners and tight spots a cinch."

First Excavation 315 Yards

At 8:00 A.M. Guenther Brothers started the first excavation, moving 315 yards of dirt.

The job was completed in just four hours and fifteen minutes. The BAY CITY hoe was then loaded onto a low-boy. After lunch, the equipment was hauled to the second site, arriving there at 1:15 P.M.

Second Basement Dug in Less Time Than First

In just 3 hours and 50 minutes the second excavation was complete, including the entire job of reloading the equipment. Size of the second job: over 300 yards of dirt!



265

BAY CITY SHOVELS, INC. . BAY CITY, MICHIGAN



SHOVELS . CRANES . HOES . DRAGLINES . CLAMSHELLS

BAY CITY Hoe's Fuel Consumption Low

In moving the sum total of some 615 yards of dirt (total work time, 7 hours and 45 minutes), Guenther reported that the BAY CITY hoe used approximately 18 gallons of diesel fuel, representing a considerable saving over the 30 gallons used by other machines, on the same type jobs.

With a work-record like this, it is little wonder that Guenther Brothers reputedly have dug and back-filled an estimated 50% of all house basements in the Ann Arbor area during the past ten years.

A Few of The BAY CITY Features

• Two-shoe swing clutches with cast iron friction wheels for best heat dissipation and resistance to wear • One-piece cast alloy steel bases for greater strength and desirable weight • Long, wide crawlers for added stability • Ball-bearing drums in tandem actuated by power booster clutches for easiest operation • Helical cut gears for main power give quiet, smooth operation • Self lqcking worm and worm wheel boom hoist raises or lowers boom under power • Choice of large cubic inch displacement gas or diesel engines provide maximum power • Heavy duty differential permits sharp or gradual turns with power on both crawlers • Available attachments to operate as crane, clamshell, dragline, shovel, hoe.

BAY CITY Specifications and Catalogs Available

Model	Rated Capacity	Maximum Bucket Width	Boom Length	Maximum Digging Dopth	Maximum Reach	Rated Net H.P.	Catalog
30	1/2	36"	17'0"	17'6"	26'5"	57	30-1
45	3/4	42"	20'0"	22'0"	32'4"	76	45-1
60	1	50"	22'0"	23'3"	34'9"	113	60-B
71	11/2	54"	26'0"	26'8"	39'5"	123	71-A





"AIR KING" Quick-Acting, Universal HOSE COUPLING

FOR COMPRESSORS, ALL TYPES OF AIR TOOLS, WATER, OIL AND SPRAY SERVICE

This versatile coupling is built along plain, rugged lines to assure long, trouble-free service under severest working conditions.



Illustrated: Above, two Hose Ends connected. Left, Female I. P. T. End. Right, Male I. P. T. End.

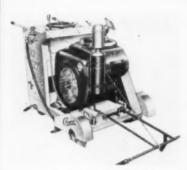


The "Air King" will reduce operating costs wherever quick connections are required. Locking heads are identical for all sizes of hose or threaded ends within the coupling's size range, and are locked by pressing together and applying a quarter-turn. Equipped with patented Safety Locking Device. Bronze or rustproofed malleable iron, in sizes up to 1 1".

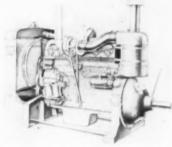
Stocked by Manufacturers and Distributors of Industrial Rubber Products



EQUIPMENT NEWS . . . continued



mounted on sealed, anti-friction bearings that need little maintenance. Ball bearing screw feed raises and lowers the blade and also provides accurate cutting depth control. The blade is driven by a reinforced V-belt. Other features of the new model—which weighs 135 less than its predecessor—are a new depth indicator, a 36-hp Wisconsin engine, a water pump with a built-in clutch, and a new blade shaft lock pin.— Clipper Mfg. Co., Suite 143, 2800 Warwick, Kansas City 8, Mo.

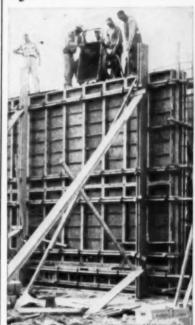


POWER BOOSTER-International Harvester has entered the turbocharged engine field for the first time with its new 250-hp Turbotorque UDT-1090 power unit. The 250-brake-hp rating, attained at 1,500 rpm, represents an increase of 50 hp over its naturally-aspirated counterpart. The new six-cylinder unit uses Garrett Corp.'s AiResearch turbocharger to move 60% more air through the big 14-in. dia air cleaner. This tremendous boost in air supply to the cylinders results in fuel economy and the higher power output. A water-cooled oil temperature stabilizer is standard equipment on the new unit and the radiator has been enlarged to increase its cooling capacity.-International Harvester Co., 180

International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.

continued on next page

Symons field report...



Pouring Costs Cut 25% with Symons Forms...

Joseph R. Farrell, Inc., Philadelphia, general contractor, saved more than 25% in pouring costs on the new Cardinal Dougherty High School through the use of Symons Forms. 5,522 feet of Symons Forms were purchased for the job, and were used more than eight times. A total of 50,000 square feet of forming was erected for the 1600 yards of concrete.

Contributing to the speed and economy of the pouring was the use of $2^{\circ} \times 12^{\circ}$ strong backs. The strong backs were held in place by 12° standwall ties used as strong back ties to make the horizontal joints stay plumb for the 18 and 20 foot walls. The strong backs permitted continuous pouring of the foundation walls.

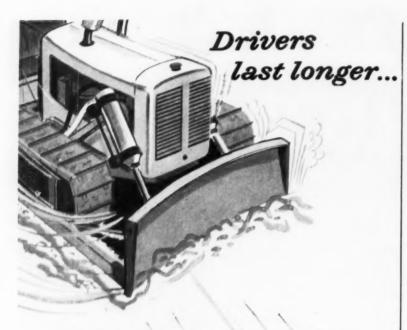
With your plans, our engineers will prepare a complete form layout, bill of materials, and make recommendations for the most efficient and cost saving method of forming.

Symons Forms can be rented with purchase option. Symons Clamp & Mfg. Co., 4255 Diversey Avenue, Dept. H-7, Chicago 39, Illinois.

Workmen strip forms while a new pour is started.



Catalogs and Added Information on FORMS—CLAMPS—SHORES Sent on Request



when heavy-duty machines use J-M Industrial Frictions

Johns-Manville Friction Materials deliver the safe, dependable performance that frees your drivers from worry about personal danger. And remember, it's much easier to replace linings than good operators. You get more out of your equipment, too, in terms of working time and "pay loads" handled.

That's because these rugged, durable facings and blocks are engineered for the job . . . and designed for outstanding performance plus maximum service life on trucks, shovels and heavy machinery.

Johns-Manville makes a wide range of industrial friction materials such as linings, facings, cones and segments that are "original parts" on many famous makes of heavy-duty units. For fast, easy replacement, they are available in Johns-Manville Assembled Sets that assure greatest safety in your equipment.

See your Johns-Manville Distrib-



utor for data on J-M Brake Linings and Clutch Facings for industrial equipment, or write Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario. Ask for booklet FM-35A.





CULVERT FORM-A steel form that simplifies culvert construction has been introduced by Symons Clamp & Mfg. Co. The form is designed to connect Symons standard wall panels and slab panels so that a culvert can be poured monolithically. No builtup forms or other special equipment is necessary. The form is a 9x9-in, steel section that provides for a 3-in. face on the roof slab and on the wall. Between the wall and the roof is an 81/2-in. wide, 45-deg-angle surface. The form comes in 4, 6, and 8-ft lengths and special sizes are available on order. The forms, made of 11gage hot rolled steel, can be reused. Standard hardware secures the forms, and no special fittings are required.-Symons Clamp & Mfg. Co., 4249 W. Diversey Ave., Chicago 39, Ill.



FOR SMALL CRAWLERS — A press designed to remove and replace track pins and bushings without removing the track shoes has been introduced by Owatonna Tool Co. for small crawler tractors. The steel frame and ram assembly mounts on a steel base, but it is easily removable for transportation to the field for onthe-job repairs. A powerful 35-ton, two-way, single-cylinder OTC ram does the pushing. A full



LEHIGH EARLY STRENGTH CEMENT

Constructing special section of storm sewer in downtown Hutchinson. A total of 225 precast rectangular units (10° x 8° x 2½°) were used, each weighing 9 tons. Note units on left ready for placement.

speeds storm sewer project . . .



Placing unit on concrete base. Hole in side permits tie-in of feeder line.



Quartzite Stone Co., Lincoln, Kansas, manufactured arched and round pipe used in all other sections of system.

To meet unusual excavation requirements, specially designed rectangular precast concrete units were used for a 2250 ft. section of the new Hutchinson, Kansas, storm sewer system.

Using Lehigh Early Strength Cement, the contractor cast units one day, stripped forms the next. Form, curing and general overhead costs were cut, and units were moved to jobsite in half the time required had regular portland cement been used.

Lehigh Early Strength Cement was also used in parts of the castin-place base for the pipe and in resurfacing street intersections, to keep the entire job moving smoothly, to cut down annoying detours.

This is another example that gives us reason to say "Somewhere on nearly every job Lehigh Early Strength Cement will save time and money."

Contractor: J. H. Shears Sons, Inc., Hutchinson, Kansas Engineer: Ray Bruggeman, City Engineer, Hutchinson, Kansas

Ready Mixed Concrete: Shears Ready Mix Concrete Co., Hutchinson, Kansas

- . LEHIGH EARLY STRENGTH CEMENT . LEHIGH PORTLAND CEMENT

LEHIGH PORTLAND CEMENT COMPANY

Allentown, Pa.

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THE BARCO RAMMER

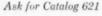
Put Barco Rammers on the job and watch the results. One of the biggest advantages they offer is ability to handle work in minimum time.

HIGH DEGREE COMPACTION - In test after test. Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method) - EASILY! EFFICIENTLY! ECONOMICALLY!

FOR TOUGH JOBS - The Barco Rammer is especially useful for compacting fill in restricted areas close to walls, culverts, and abutments - in trenches, ditches. ONLY the Barco Rammer can produce specified high degree compaction on lifts up to 20 inches.

ONE MAN OPERATION - On area tamping, one man can average 20 to 30 cubic yards of fill per hour.

> On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour.



BARCO MANUFACTURING CO. BARCO RAMMER

for High Degree Soil Compaction



THE BARCO VIBRA-TAMP

The new Barco VIBRA-TAMP is a proven tool superior in design and performance - backed by leading equipment distributors representing Barco in all parts of the country.

VERSATILE PERFORMANCE - For vibratory compaction of granular base materials and tamping bituminous surfacing.

ECONOMICAL - to buy, operate, and maintain! No special tools required. Saves your bigger, costlier equipment. Tamp up to 750 sq. yds. per hour. A real work-horse on sand, gravel, soil, chippings!

EFFICIENT, DEPENDABLE - One man does the work of many with VIBRA-TAMP. Self-propelled. Operates in any weather. Works flush against curbs, foundations, and walls. Simple design and quality construction keep the machine on the job

day in and day out. Moving parts fully enclosed. Handle adjustable to comfortable height.

Ask for Catalog 630

512.1 Hough St., Barrington, III. BARCO VIBRA-TAMP for Granular Fill and Bituminous Surfacing

EQUIPMENT NEWS ...

continued

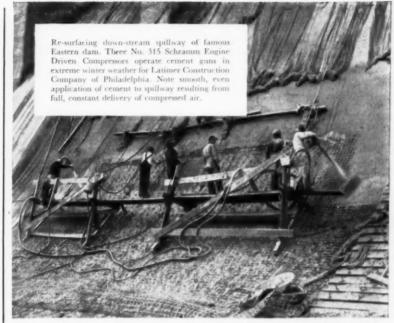
71/4-in. stroke assures complete removal in just one cycle. The press was originally designed for small John Deere and J. I. Case crawlers, but adaptor sets for other crawlers of comparable sizes are available. To facilitate track handling, 5-ft roller conveyor sections can be used. The press requires 16x40-in. of floor space without the conveyors and stands 321/2 in. high. It is available with hand, gas, or electrically operated pumps.-Owatonna Tool Co., 380 Cedar St., Owatonna. Minn.



WELDING PLUGS—Joy's new set of connectors for welding cable leads and whips are supplied in one size that can be attached quickly to all cable sizes from 4 through 4/0 awg. They have a maximum welding service rating of 550 amps. Features include water-tight Neoprene insulating sleeves, positive twist-lock connections, and easy installation.—Joy Mfg. Co., Electrical Products Div., 1201 Macklind Ave., St. Louis, Mo.



4-BATCH TRUCKS-Anthony's new truck body is capable of hauling four batches of cement while remaining within legal load limits in most states. The body has three batch gates and four cement boxes. Each gate is aircontrolled by a double throw switch from the cab. Twelve-volt solenoid valves operate the air cylinders. The cement boxes, easily removable, have a capacity of 12 cu ft each. The body, 111/2ft long, has a capacity of 8 yd without the boxes. Its floor and tailgate are 10 gage and the sides are 12 gage steel. The tailgate is



CONSTRUCTION "SUPERS" SAY:

"Best for Guniting on any dam"

Guniting contractors give a heap of reasons for preferring Schramm Unistage Air Compressors. The two we hear most often are: (1) "Schramm provides constant pressure—free from variation." (2) "Schramm operates at any desired pressure for long periods without maintenance."

How do Schramm Unistage Compressors deliver full, even pressure when other units can't? The answer is PNEUMASTAT**, a patented Schramm instrument that automatically regulates production of compressed air according to demand. Also, Pneumastat-controlled Schramms can be operated as a battery to give any required volume of air. Schramm engines run at the speed for which they are designed. You get just the pressure you want without overspeeding. Consequently, maintenance costs are low.

Other reasons for low maintenance expense? Plenty of them! Schramm mechanically operated poppet-type intake valves last as long as the compressor. Schramm multiple cylinder construction means less work for each discharge valve. And Schramm vibrationless operation and pressure lubrication assures longer bearing and cylinder life.

If your Guniting or cement work suffers from fluctuating pressures, get full details of Schramm Unistage Compressors today. Send for your copy of Catalog 5501 without obligation, or see your local Schramm Dealer. He's listed in the Yellow Pages of your Telephone Directory.



MANUFACTURERS OF AIR COMPRESSORS
604 North Garfield Ave. West Chester, Pa.



Schramm Air Compressors are preferred for Guniting and concrete spraying because of the constant pressure (freedom from fluctuations) and ability to operate at any desired pressure for long periods without maintenance.



Schramm Portable Compressors are easy to install, individually or as a battery. Unistage Models are available in sizes 125, 210, 315 and 600 cfm.

air controlled from the cab. Lifting power comes from an Anthony Teleramic head lift hoist with a 15-ton capacity.—Anthony Co., Streator, Ill.

CHECKS BEDROCK—A new instrument for shallow subsurface exploration without drilling has been developed by Geophysical Specialties Co. Called the model MD-1 refraction seismograph, it is used for determining the pres-





"1-Man" vibrators cut cost on \$4,000,000 office building

"Our two "1-Man" vibrators are the best pieces of equipment on the whole job," says Zimmel Miller, Supt., Miami Valley Construction Co. "We use them exclusively to vibrate the 7,000 yds. of concrete going into footers, columns, walls and slabs on this job. We cover 6,950 sq. ft. with each slab pour and *one man* with a Master vibrator keeps up easily with the pour and thoroughly vibrates the heavily reinforced pan slab.

"We like these vibrators because we know they can take it and because they save us money every day on the job."

You'll like the new "1-Man," too, because it gives you 100% longer life than other makes. The motor is sealed in the vibrating head; there's no flexible shaft to get out of whack; no oiling or greasing problems. It's actually a self contained, precision built vibrator. It weighs only 25 lbs... and with no heavy engine or motor to drag around, one man handles it easily. Plugs into any regular 115 volt AC or DC outlet. Find out yourself... write for free folder or ask your Master distributor for a free demonstration.

MASTER VIBRATOR COMPANY 157 Stanley Ave., Dayton 1, Ohio

MASTER

ence or absence of bedrock or other solid material at any depth up to 50 ft. It can also be used to identify subsurface materials without drilling. Its features include its compact size, ease of operation, and direct reading dials. Because it uses transistors, the unit, exclusive of its sledgehammer, weighs only 16 lb. It works on the principle that sound waves from a sledgehammer blow will travel along different paths and at different speeds through the subsurface, depending upon the nature of the materials encountered. - Geophysical Specialties Co., 4206 Longfellow Ave., Minneapolis, Minn.



CONTROLS DELIVERY - This hand-operated grease gun has an easily adjustable nut that sets delivery from high volume with little pressure to low volume with high pressure. Called the V. C. gun, it features a swivel spout that reaches fittings in out-ofthe-way places; a floating sleeve with a lip that smoothes out dented cartridges; and a specially designed leak-proof plunger. The head of the gun is tapped with a 1/8-in. P. T. to accommodate a loader valve. Bulk grease can be used in the gun by leaving an empty cartridge in the barrel and loading it in the same way conventional gun is loaded.-K-P Mfg. Co., 1226 Linden Ave., Minneapolis, Minn.

HIGH CAPACITY CLEANER -

Finger-tip control of flushing and rinsing capacities up to 480 gph are among the features of the model 1858 Hypressure Jenny, one of 11 new steam cleaner models introduced by Homestead Valve Mfg. Co. Called the 1800 series, the cleaners have a steam cleaning capacity of 180 gph. Designed for either single or two-



Big job, this all-concrete, 4-tier Ann Arbor, Michigan, parking structure. Size is 233' x 165'; capacity, 479 cars.



"Best way to do this big 4-story job...and save most"

-says busy contractor



This is Railporter. Capacity is 1400 lb., 14.6 cu. ft. Non-powered trailer unit doubles capacity.



Railporter loads at hopper. Touch of control sends it swiftly on its way to pour site—alone!



Quick dumping (either side), then Railporter scoots back fast for another load. Note rail pattern. Goes where you want it.

Do new ideas pay off? Here's one that does—and big. It's Rex Railporter.

Contractor Jeffress Dyer, Inc., saw its advantages in the building of a new 4-tier parking station for the University of Michigan—then went on to profit these many ways:

- Railporter poured an average of 150 yards daily
- Top pour was 160 yards in 6 hours
- Released 12 men for other important work on the job
- Cut completion time, saving a considerable amount of money
- Poured a total of 5000 cubic yards on the 4 stories and ramps

These are the time and money saving advantages you get with Railporter. Here's why. It's the really modern way of moving concrete and construction materials. It's tops for speed and simplicity. Imagine a versatile self-propelled unit that runs on a single rail—entirely unattended. It travels straight lines, curves, restricted headroom areas—stops automatically, dumps fast. One control for forward or reverse.

It's simple, fast to set up. Handy monorail sections connect in a jiffy. Perfect alignment isn't necessary.

It will cost you nothing to talk Railporter with your Rex Distributor—but it can save you important money. CHAIN Belt Company, 4664 W. Greenfield Ave., Milwaukee 1, Wisconsin.

The picture story complete. Get this informative, well-illustrated Rex Railporter Catalog. Write for Bulletin 56-47.





MOTO-MIXERS . BUILDING MIXERS . PUMPCRETE . RAILPORTER . PUMPS

CHAIN' BELT COMPANY

PAVERS - SPREADERS - FINISHERS - FLOATS - CURING MACHINES - FORMS

HYSTER

WINCH PULLING POWER **KEEPS CONSTRUCTION** JOBS MOVING

Here's the flexible pulling power that keeps equipment on the job and moving. A Hyster towing winch on your new or used Caterpillar-built tractor puts that power where you want it, when you want it.

Rescuing bogged-down equipment, land clearing, assisting other equipment up steep grades, winching machines in and out of hard-to-reach locations-any tough job is routine for a Hyster Towing Winch.

Hyster makes a matched Towing Winch model for each of the Caterpillar-built Tractors.

At Caterpillar-Hyster Dealers throughout the world. Call your Caterpillar-Hyster dealer for complete details.

HYSTER COMPANY



Peoria, Illinois Nijmegen, The Netherlands

Easing equipment down steep slopes is only one of many utility jobs performed by instantly





Bogged down scraper put back into action fast, cuts production loss, increases profit.



controlled winch power makes this job go faster.



Tough bulldozing jobs like this are possible with steady, reliable Hyster winch power.



Caterpillar and Cat are registered trademarks of the Caterpillar Tractor Co.

is possible when other machines get assistance from tractor-mounted winch,



gun operations, the cleaners offer a choice of oil-fired or gas-fired units of stationary, portable, or trailer-mounted types. A gasoline engine drive is available in place of the standard electric motor. Other features are automatic electric ignitions, independent fuel systems, slow-speed positive displacement pumps, and air-bell and alleviator hose for smooth, quiet operation. - Homestead Valve Mfg. Co., Coraopolis, Pa.



PUMP ON WHEELS-In answer to requests from contractors doing road work in muddy or rough terrain, Rice Pump & Machine Co. has mounted its 3-in., 20M pump on a trailer with 5.90-15 wheels. Automotive jacks are used as steadying stands to permit exact leveling. Timken taper roller bearings in the wheels and a large towing ring allow the pump to be towed from job to job by a small truck or jeep. The same mounting is available for larger pumps.-Rice Pump & Machine Co., Belgium, Wis.

COMPACT POWER-A transistorized power supply has been developed by General Electric for use with two-way radio systems. It is said to provide greater reliability in mobile radio equipment and to effect substantial

Push, Pull or Lift Safely with SIMPLEX HYDRAULIC EQUIPMENT

RE-MO-TROL PULLERS



Hydraulic Pumps and remote-controlled Rams for pulling wheels, gears, shafts, etc.; also pushing and lifting in any direction from a distance. Safe, smooth, powerful. 10 to 100 ton ca-pacity units. Unique Center-Hole sim-plifies rigging. Hand, electric, gas and air power pumps.



JENNY "CENTER-HOLE" PULLERS



Self-contained Hy draulic Pullers with famous Center-Hole famous Center-Hole for easy pulling, pushing, lifting, Rug-ged, versatile; 6 models, 30 to 100 ton capacities.

Get full information on the most complete indus-

ment; write for Hydraulic Bulletin.

AC Power Combination

STANDARD HYDRAULIC

Sturdy, safe, efficient units to do any lifting job easy and fast. 8 models; 3 to 100 ton capacities

JACKS

trial line of Hydraulic Jacking and Pulling equip-

TEMPLETON, KENLY & CO. 2509 Gardner Road Broadview III

Arc welding "at site" is PROFITABLE with these lightweight, portable HOBART welders Lets your men do welding jobs on the spot Versatility . . . dependability . . high efficiency . . . these are qualities which make contractors successful and add up to more profits. The cessful contractor knows he can rely on Hol welders for these same profitable qualities. Take this "BIG BROTHER" 4-cylinder air cooled gas-oline engine drive for example. Versatile... welds otine engine drive for example. Versatle... welds anywhere, does on-the-spot repair jobs immediately, provides DC 2 kw power for tools, lights, motors. Dependable... packed with long life features. Efficient... Hobart engineering assures highest performance standards. Coupon will bring you the complete story quickly. No obligation. Hobart Brothers Co., Box 687, Troy, Ohio Phone FE 21223 "One of the world's largest builders of arc welding equipment FREE HOBART THE WELDERS BOBART BROTHERS CO., Box 687, Troy, Ohio thout obligation, send complete information on the fol-Contractor s Special Vest Packet Guide Contractor's Special AC Welder 250 amp.

Address



Paving Maine Turnpike Extension which now carries traffic from Kittery to Augusta. Insurance costs can spell profit or loss on jobs like this.



PUT AJAX TO WORK FOR YOU

It's as simple as two-plus-two. Excessive insurance costs can endanger your profits. Accident rates can send insurance costs up — or down. And a most effective help in reducing your accident rate (says the National Safety Council) is safety messages which get read.

AJAX CUPS can help you here . . . because they put their imprinted safety messages right in your workers' hands, at just the moments when they're relaxed, receptive, ready to read. And at no extra cost to you.

What's more! — AJAX Cups and Drinking Equipment provide the safest, cleanest, most welcome way to take fresh drinking water to your men in the field.

So why don't you get the two-way protection of AJAX complete drinking water service on your next job?

GET THE FULL STORY — Write us today for samples of imprinted AJAX Cups and a new folder giving complete details.



Water Tanks deliver fresh water to workers — mean less time lost on the job. 4 oz., 6 oz., and 7 oz. cups imprinted with assorted stock safety messages at no extra cost — or your own message to order. AJAX Cups and Dispensers are ideal for use with any tanks, barrels or pipeline faucets.





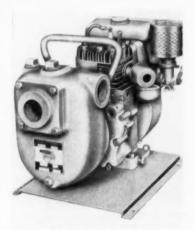
United States Envelope Company

General Offices: Springfield 2, Massachusetts

15 Divisions from Coast to Coast



savings in component replacement. The unit replaces the receiver portion of the mobile power supply, and reduces the need for frequent replacement of vibrators. Designed around a printed wiring board, it measures only 31/2 in. wide, 4 in. long, and 13/4 in. deep. It weighs only 12 oz. It can be used with any standard make of mobile equipment using a 12-v power source in the 25-54mc, 144-174-mc, and 450-470-mc bands .- General Electric Communication Products Dept., Electronics Park, Syracuse, N.Y.



contractor's PUMP—Lancaster's new self-priming portable pump features a four-volute cutoff design that is said to provide high capacities in the high pressure range without overloading the 2-hp, four-cycle gasoline engine. Other features are a greaselubricated seal and a built-in check valve. The pump is priced at \$138, including steel base, carrying handle, and strainer.—Lancaster Pump & Mfg. Co., Lancaster, Pa.

continued on page 241

"JUMPIN' JACK" TESTS STRENGTH OF M-S-A° SAFETY BELTS AT 28,500 LB. FORCE

Hurtling through space with a 28,500 lb. force, this Air Force parachute type dummy provides a rigid test for M-S-A safety belts.

MSA's "Jumpin' Jack" is constructed of a welded aluminum frame, thoroughly surrounded with molded rubber. This assures the most strenuous conditions possible in the drop tests.

Actual test procedure calls for the following steps: securely fasten the belt around "Jump-in' Jack" . . . then connect tail line by snap hook to D-Ring on the belt. Next step is securing the other safety snap hook to a rigid support. Finally, the dummy is allowed to fall freely. The test is repeated twice more without removing the belt from the dummy.

Drop tests reveal whether or not the belts supported the dummy securely to the restraining rope. Rivets, stitching, hardware and webbing are closely examined for any visible signs of danger. The rope line must hold the belt securely throughout the tests to pass MSA's strict requirements.

You can bet this test procedure pays off too—in terms of number of lives saved in industry. That's why so many workers hook up their personal safety with M-S-A belts. There's a style available to meet your specific requirements.



This belt is specifically designed for use by bridge workers, steel construction workers and derrick workers. Drop-forged quick release type buckle with special keeper arrangement prevents accidental opening and release. High tensile webbing is tested at 3400 lbs. and is mildew, water and fungus resistant.



Blaw-Knox Batch Plant cuts operating costs \$200.00 weekly for Selma Concrete Products Co.



Selma Concrete Products Company of Birmingham started to save money the day that they installed a Blaw-Knox automatic Batch Plant. W. H. Sweeney, president of the company says, "We can make concrete block just about as good by handling cement and aggregates with motorized wheelbarrows, but we can't make it as profitably."

The cost-cutting advantages of automatic batching and weighing equipment are easy to spot. Precise amounts of cement and aggregate in large quantities are measured and moved to the block machine at a rate which lets Selma get maximum output. There's no problem in meeting the most exacting specifications, shift after shift. The Selma plant is equipped with beam scales; one for weighing cement, the other for weighing aggregates.

Real cost-saving advantages in Blaw-Knox automatic Batch Plants are helping concrete operators everywhere meet increasingly tough specifications, and at the same time step up production and profit. Why not contact your Blaw-Knox distributor—he can provide a Blaw-Knox Batch Plant custom tailored to your needs.



BLAW-KNOX COMPANY

Construction Equipment Division 38 Charleston Avenue, Mattoon, Illinois



CREWS HAVE READY POWER FOR ANY JOB ... ANYWHERE!

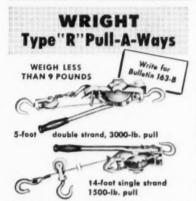
You save time . . You speed work . . . because with Katolight Portable Power Plants, crews have "plug-in" electricity instantly available to sperate all types of tools, equipment, lights, right on the job, regardless of location or conditions.

Sizes and models for every portable, standby or continuous use. Dolly or Skid mounted models from 350 watts to 75 K.W. A.C. Up to 500 KVA on request.

> DEPENDABLE ECTRICAL EQUIPMENT SINCE 1928:

KATOLIGHT CORPORATION

Box 891-106 . . . Mankato, Minnesota



Sturdy - Light - Safe - Economical

Here are some of the fine features of

WRIGHT Type "R" Pull-A-Ways:

Drop forged ductile aluminum alloy frame • Wire hoist cable of maximum strength and flexibility • 8" minimum handle movement—for close hook-ups • 2" drum hub for cable • No oiling needed • Drop forged steel hooks • Removable, reversible "Safety Handle" that bends before any part of hoist is overloaded • Automatic load lowering, with positive control for safety.

Write our York, Pa., Office for Bulletin DH-163B for full story



Wright Hoist Division
AMERICAN CHAIN & CABLE

Bridgeport, Conn. • York, Pa.

EQUIPMENT NEWS...continued



MODIFIED DW15-A redesigned four-wheel prime mover and a new matching scraper have been announced by Caterpillar, A bigger Cat diesel engine, rated at 200 hp at 2000 rpm, has been designed for the popular DW15 tractor (series E). The engine is said to have the ability to make use of natural engine lug characteristics to accomplish a 23% torque rise and a higher rim-pull over a wide speed range-decreasing the need for gear changes. As an example, in fourth gear over 3,000 lb of rim-pull are delivered when the tractor is operating in the speed range between 9 and 18 mph, according to the company. The tractor also incorporates a new tenspeed transmission. Top speed is 37.2 mph. Drive train components, such as the final drive housings, axle tubes and shafts, and the final drive gears, have been strengthened. Rear wheel tread has been increased by 9 in. over that on previous models, and standard times are now 26.5x25, 20-ply tubeless. The DW15's braking system has also undergone changes. The No. 428 scraper has a struck capacity of 13 yd, a 4.1-yd increase over the No. 15 scraper, its predecessor. Heaped capacity is 18 yd. Ground clearance has been increased and the apron lift is higher. The pushlock has also been modified to make it higher and wider.-Caterpillar Tractor Co., Peoria, Ill.

TRUCK-MOUNTED ROTARY-

Schramm now produces a truckmounted version of its popular Rotadrill. The unit exerts a maximum down pressure of 24,000 lb and a maximum lifting pressure of 19,000 lb. Holes can be drilled to 700 with 41/2-in. pipe in some materials, according to the manufacturer. With 21/8 lin. pipe depths of 1500 ft have been reached. Rotary air drilling is accomplished through a reversible hydraulic motor-driven head mounted on a carriage that rides tracks mounted on the mast. This hydraulic head, plus the slip hold-

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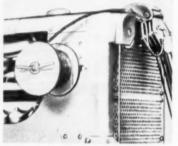
IRVINGTON

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Dept. CM&E 20 Vesey St. New York 9, N. Y.



ers, eliminates the need for a rotary table. The 30-ft high mast can be lowered for long-distance highway transportation. A Schramm compressor driven from the truck delivers 450 cfm at 20 psi.—Schramm, Inc., 900 E. Virginia Ave., West Chester, Pa.



CABLE RESERVE—A new reel has been designed by Caterpillar to provide a reserve supply of cable for its Nos. 9A, 9S, 8A, and 7U bulldozers. Designed to mount conveniently on the side of the radiator guard, the cable reel provides storage space for 300 ft. Should cable breakage occur, the reserve cable can be reeved through the cable control sheaves to replace the broken portion. This eliminates discarding the full length of cable. — Caterpillar Tractor Co., Peoria, III.

COMPACT POWER PLANT -The new Fageol 44 lightweight industrial engine produces up to 45 hp at 5500 rpm with a running weight of only 160 lb, according to the manufacturer. Extremely compact, the 44-cu-in. displacement engine measures only 23%in. long, including an SAE No. 5 bell-housing; 15 9/16-in. wide; and 23%-in. high. The Fageol 44 is a four-cycle, four-cylinder, water-cooled power plant with a 9:1 compression ratio and overhead valves operated by a geardriven overhead camshaft. The



Even though Wagener grout and sludge pumps are tailor-made for power source, capacity, pressure, viscosity and resistance to abrasives . . . they can be shipped promptly . . . because they are assembled from standard components. In addition, they are available in price ranges suitable to anticipated usage.

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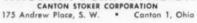
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38 hp

6,500 lb

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This unique GMC 12-wheeler hauls 9 legal yards within 60,000 GVW

Warner of Philadelphia-one of America's top three ready-mix outfits-uses GMC's to swing 2½ extra yards every trip

T TAKES plenty of truck backbone to haul 18 tons of concrete. But Warner Company took advantage of GMC's enormous reserve strength—had an extra front axle installed locally for the desired weight distribution—and they have mixers that swing 9-yard loads!

That means each of their GMC FWX660's is hauling, in *two* trips, almost as much payload as their previous trucks delivered in *three*. Multiply that by the 26 GMC's in Warner's fleet, and you'll see how delivery costs take a nose dive.

"GMC gave us the ideal weight setup in an easyto-maneuver c.o.e.," says Equipment Superintendent Charles Ponti. "What's more, these trucks have the ruggedness—and then some—to handle their big loads under the toughest conditions we ever meet."

The first of these GMC FWX660's was put to work in early 1956. How successful were they? Warner ordered 6 more eight months later. Then 3 more. Seven others were delivered this past March.

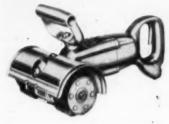
No mystery about the reason: "On every job where we can use their full 9-yard capacity, we are making substantial savings," says Ponti.

Here, then, is another example of the way GMC's —of every size and type—are cutting costs for America's top construction firms. No matter what you haul—or where you haul it—check *all* the GMC advantages with your GMC dealer!

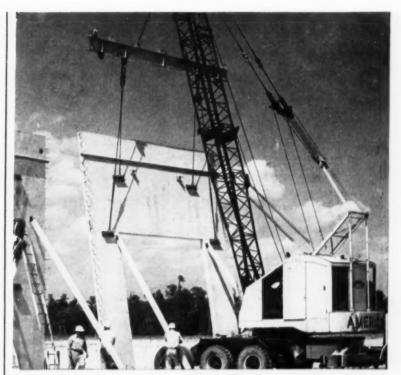
GMC TRUCK & COACH-A General Motors Division



cylinder head is cast integrally with the block. Standard equipment includes a 6-v, 35-amp generating system; solenoid-actuated starter, oil bath air cleaner; fan, and distributor or magneto ignition. Cast aluminum cylinder blocks, mechanical or velocity-type governors, and superchargers are available as optional equipment. — Fageol Products Div., Twin Coach Co., 850 W. Main St., Kent, Ohio.



AIR TOOL CLEANS-The Aurand MP4 pneumatic cleaning tool will remove rust, scale, old paint and other accumulations, from iron, steel, brick, and concrete surfaces. The tool features a rotor that floats on the spindle on which it is mounted. Any thrust that may be applied to the spindle does not effect the functioning of the rotor, since it slipfits on the spindle. Air entering the housing on the tool is controlled by a governor that moves so that the plunger head is pushed closer to the face of the jet. This makes sure that the proper amount of air enters the tool. With a given set of weights, the speed of the tool can be varied 200 rpm, either plus or minus, by tightening or loosening the plunger stem in the head. The motor unit develops a little over 1 hp when operated at 90-lb pressure. -Aurand Mfg. & Equipment Co., 1210 Ellis St., Cincinnati, Ohio.



TILT-UP HANDLING SIMPLIFIED WITH CROSBY-LAUGHLIN SHACKLES



DROP FORGED RINGS OFFER GREATER SAFETY

Wire rope and chain sling safety is substantially increased by replacing welded links and rings with drop forged Crosby-Laughlin* Rings. Sling Links and End Links. Safety-conscious construction men demand these weldless, heat treated fittings because of their greater strength and reliability on every lifting job! Crosby-Laughlin Weldless Rings and Links are available with stock diameters up to 13%. Your distributor has detailed specifications on sizes and capacities.

*REGISTERED TRADEMARK

Handling tilt-up panels—almost any material—is made easier by using quickly adaptable shackles. You'll find them used everywhere, on every job!

Experienced construction men, miners and earth movers know that drop forged Crosby-Laughlin* Shackles give them reliable, long life performance with maximum safety for men and materials.

Vitally important to shackle safety is perfect alignment of pin holes that distribute load forces equally over the bow. Crosby-Laughlin Chain and Anchor Shackle pin holes are precision drilled in close tolerance jigs. Oversize pins, larger in diameter than the bow, resist shearing under shifting or shock loads.

For safety's sake, insist on genuine Crosby-Laughlin Shackles—manufactured under strict quality control—in a complete range of sizes from ½ to 3 inches.

A complete line of quality drop forged Crosby-Laughlin fittings is available from leading construction equipment distributors. They also have descriptive catalogs containing technical and engineering specifications on this line.

World's most complete line of drop forged fittings for wire rope and chain

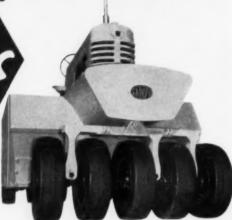
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88 inch rolling width, torque converter, power operated reversing clutches and speeds to 22 m.p.h. make the Tampo SP-11S the most efficient black top roller.

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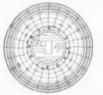
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New **Publications**

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

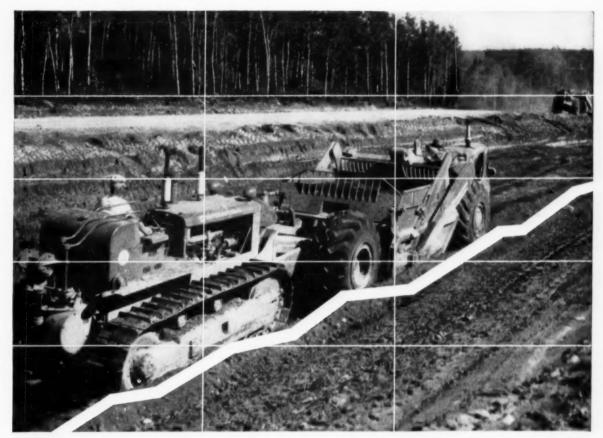
I H ENGINES - An 8-p catalog contains up-to-date information of International Harvester's line of four-cylinder, carbureted power units. All of these power plants, except the smallest unit, can be equipped for LPG, natural gas, kerosene, distillate, or gasoline operation. A graph illustrates power and fuel consumption curves for the entire line.—International Harvester Co., Construction Equipment Div., 180 N. Michigan Ave., Chicago 1, Ill.

TOOL CATALOG - Armstrong Bros. Tool Co. has released a new 120-p general catalog that lists 4,980 Armstrong products, including some 500 new types and sizes of small tools. The catalog describes Armstrong's lines of wrenches, socket wrenches, drop forged clamps, tool holders, setup and hold-down tools, cutting and pipe tools-Armstrong Bros. Tool Co., 5200 W. Armstrong Ave., Chicago 30, Ill.

ELECTRIC BLASTING - Canadian Industries Ltd. has issued a 61-p booklet entitled "Blasting Electrically." The contents cover priming procedures and basic principles of wiring-up operations and the firing of blasts .-Explosives Div., Canadian Industries Ltd., Box 10, Montreal, Canada.

HARDFACING MATERIALS -Metal & Thermit Corp. offers a 20-p booklet about their new line hard-surfacing materials. Called Murex Hardex, the hardsurfacing electrodes are listed in chart form according to their applications. Physical and chemical properties of typical deposits for each of the 16 electrodes are described .- Metal & Thermit Corp., Rahway, N. J.

BRIDGE PROBLEMS-The problems and solutions of bridge concreting are described in a 16-p publication of the Master Builders Co. Case histories of some 280



Here's a tarque converter equipped TD-24 pushloading an International Model 75 Payscraper for H. F. Radandt, Inc. On a comparative basis, the tarque converter drive gives the TD-24 a 30% boost in production.

"Production up 30% with torque converter equipped TD-24"

says Henry L. Radandt, H. F. Radandt, Inc.

Put a tractor with mechanical drive along side a similar one equipped with a torque converter, and you'll notice one important difference right away. The torque converter equipped machine does more work!

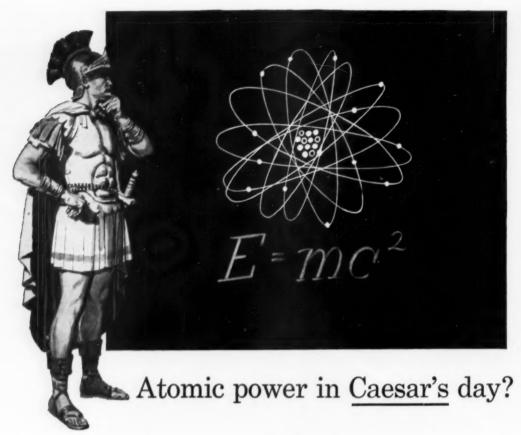
Superintendent Henry L. Radandt, of H. F. Radandt, Inc., Eau Claire, Wisconsin, is typical of the many construction men who have witnessed this comparison. Mr. Radandt estimates his torque converter equipped International TD-24 Tractor "increases production by about 30% compared to a similar machine with mechanical drive."

The International TD-24 Torque Converter Crawler Tractors prove themselves on every job. The torque converter drive provides up to 6:1 torque multiplication . . . eliminating engine lugging and stalling. It permits the engine to work in its maximum efficiency range at all times . . . making available full engine output regardless of the load. It automatically and instantaneously matches output torque to load demands . . . with gear-shifting minimized or eliminated . . . for increased ease of handling and operator efficiency. It picks up heavy loads smoothly and evenly and without clutch slippage.

International Harvester Company has standardized on Twin Disc Torque Converter components for its torque converter version of the popular TD-24 Crawler Tractor. Be sure you specify a torque converter in your next TD-24. Talk it over with your International dealer today.

Twin Disc Clutch Company, Racine, Wisconsin; Hydraulic Division, Rockford, Illinois,





Certainly!

It was there, in the ground, in the air and water. It always had been. There are no more "raw materials" today than there were when Rome ruled the world.

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Could there possibly be a better argument for the strengthening of our *sources* of knowledge—our colleges and universities? Can we possibly deny that the welfare, progress—indeed the very *fate*—of our nation depends on the quality of knowledge generated and transmitted by these institutions of higher learning?

It is almost unbelievable that a society such as ours, which has profited so vastly from an accelerated accumulation of knowledge, should allow anything to threaten the wellsprings of our learning.

Yet this is the case

The crisis that confronts our colleges today threatens to weaken seriously their ability to produce the kind of graduates who can assimilate and carry forward our rich heritage of learning.

The crisis is composed of several elements: a salary scale that is driving away from teaching the kind of mind most qualified to teach; overcrowded classrooms; and a mounting pressure for enrollment that will double by 1967.

In a very real sense our personal and national progress depends on our colleges. They *must* have our aid.

Help the colleges or universities of your choice. Help them plan for stronger faculties and expansion. The returns will be greater than you think.

If you want to know what the college crisis means to you, write for a free booklet to: HIGHER EDUCATION, Box 36, Times Square Station, New York 36, New York.





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Area at left chipped to sound masonry. It will then be patched with THORITE Nonshrink, Nonslump 20-Minute Set Patching Mortar, without necessity of costly forming, finished by application of Thoroseal.

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NEW PUBLICATIONS ...

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bridges are covered in five stories that are representative of the great variety of job and weather conditions common to bridge construction.—The Master Builders Co., 7016 Euclid Ave., Cleveland 3, Ohio

OIL FILTERS-"Have You Been Around When Your Engine's Torn Down" is the provocative title of a Caterpillar publication devoted to a discussion of lubricating oil filter elements. The booklet traces the development of oil filters from those using metal strainers to plastic-impregnated paper elements. It also explains the functions of detergent oils and it has drawings and photographs showing the effects of varnishes, sludge, and abrasive particles on critical engine parts.-Caterpillar Tractor Co., Peoria, Ill.

NEW WELDING HANDBOOK-

The American Welding Society has put out the first section of the fourth edition of its Welding Handbook. This section, entitled, "Fundamentals of Welding," contains 11 chapters and 560 pages and represents the latest knowledge from makers, researchers, and users. The new edition will be produced in five sections, each of which will be revised every year. Previously the entire handbook was revised only once every five years. New volume costs \$9.00.—American Welding Society, 33 West 39th Street, New York 18, N. Y.

TIMESAVING TIPS — Frederick Post Co. has published a 34 page booklet entitled "Timesaving Tips for the Draftsman and the Engineer." This free booklet contains 59 ideas, obtained from practicing engineers and designers, on calculating shortcuts, drafting techniques, and quick applications of engineering formulas. The booklet is instructive and well written. —Reader Service Division, Frederick Post Co., 3650 N. Avondale Ave., Chicago 18, III.

PAINTING STEEL — Red Lead Technical Letter number 12, entitled "Painting Highway Structural Steel," offers paint specifications in current practice by many state highway departments for surface preparation, shop

"But Method we've found for moving blacktop pavers"

- says leading Wisconsin paving contractor



MATHY CONSTRUCTION CO.—who lay an average of 260,000 tons of blacktop pavement in one season—claim they have speeded operations considerably by using a new front-loading Model LXP LaCrosse trailer to transport pavers, rollers and other equipment.

Big time-saver

According to President A. L. Mathy, "The quick-loading and unloading feature of this new LaCrosse low-bed, plus the fact that it can be hauled by any truck or water wagon with a towing hitch, saves time returning paving equipment for second pass, as well as moving between jobs. We especially like the LXP's low price . . . low loading height . . . and smooth 'cushioned ride' which eliminates jolting shocks."

Unique features

Secret of the LXP's unique design is a self-contained power system plus a simple sheave-type hitch and cable-lift arrangement, which permits operation behind any standard truck — regardless of whether or not it has a hoist. A motor-driven hydraulic pump and ram underneath the trailer bed supplies power for lowering trailer platform to 7"



Front-loading LaCrosse LXP low-bed hauls behind any standard truck, water wagon or other utility vehicle on the job.

height — for fast loading or unloading over front end with one man.

Two sizes

Available in 8 or 14-ton capacity, the new LaCrosse LXP trailer has a full platform width of 8', with a deck height of only 20" in travel position. Big 12 ¼" x 6" brakes, one-piece main beams, lengthwise decking and other proven LaCrosse features are STANDARD. See your LaCrosse distributor for full details today, or write LaCrosse Trailer Corp., LaCrosse, Wis.

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VALUE LEADER IN LOW-BED TRAILERS

NEW PUBLICATIONS . . .

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coats, field coats, and top coats. The eight page bulletin also lists manufacturers of red lead.—Red Lead Technical Committee, Lead Industries Association, 60 E. 42nd St., New York 17.

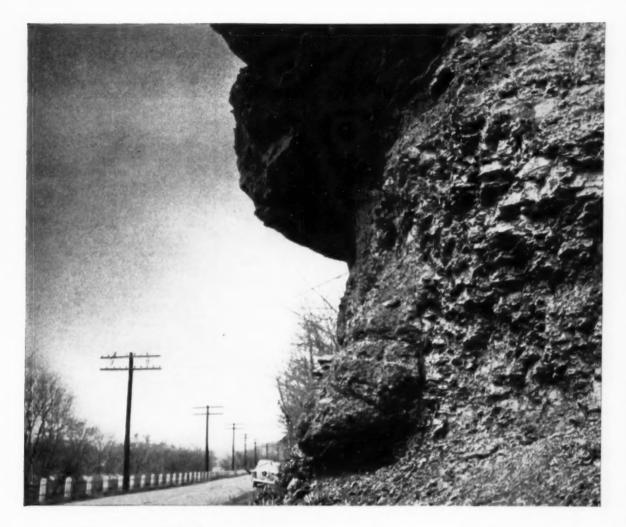
SMALL SCRAPER—Oliver Corp. has issued a bulletin on its new 6.7-yd scraper, model 990. This machine is of interest to the small contractor or to the big company for specialized functions. Write for bulletin I-703.—The Oliver Corp., 400 West Madison St., Chicago 6, Ill.

REINFORCED CONCRETE — A booklet by the Portland Cement Association, entitled, "Modern Developments in Reinforced Concrete," describes recent structural applications of RC. This 20-page booklet is of primary interest to designers, but it also contains ideas useful to builders.—Portland Cement Association, 33 West Grand Ave., Chicago 10, Ill.

PORCELAIN ENAMEL — The Porcelain Enamel Institute has issued, "Design Manual (Part two) Porcelain Enamel in Architecture, Curtain Wall Construction." The 28-page booklet shows recent building applications and gives technical data and detail drawings.—Porcelain Enamel Institute, 1145 19th St., N.W., Washington, D.C.

CONVEYOR MOVIE — Hewitt-Robins, Inc., has prepared a 17 minute color film about the conveyor system used to move 30,000,000 tons of fill into the Great Salt Lake for Southern Pacific Railroad's new 13-mile lake crossing. The two-mile conveyor has the greatest capacity ever attained on a system of this type. Film may be borrowed from the company. — Hewitt-Robins, Inc., Stamford, Conn.

NEW CEMENT — A new high early strength cement, C.B.R. III, has been developed by the Belgian firm of S. A. Cimenteries & Briqueteries Réunies, Brussels. Test reports, strength charts, engineering and manufacturers data are contained in a 12-page bulletin prepared by the company. For bulletin or further information write—Indussa Corp., 511 Fifth Ave., New York 17.



Nice to look at ... BUT WHAT WILL TOMORROW BRING?

Impressive rock formations adjacent to highways may mean a picturesque drive for motorists. But what will tomorrow bring? There's always the possibility of serious rock falls, resulting in injury, or at best a costly maintenance problem.

Danger from rock falls can be effectively minimized by means of Bethlehem Rock Anchor Bolts. These bolts promote safety because, when installed in predetermined patterns, they lock together the stratified rock slabs, so that each potentially dangerous slope

is effectively stabilized. Yet there is no apparent change in nature's handiwork, for once driven home, the bolts are virtually invisible.

Bethlehem Rock Anchor Bolts are installed in drilled holes. They are furnished in a wide range of lengths, and in two types: a 34-in. headed bolt, used with an expansion shell, and a 1-in. slotted bolt, used with a steel wedge. For greater holding power, the bolts are used with anchor plates or angle washers. If desired, they can also be combined with steel ties.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation



Send for Specification Folder

We recently prepared an illustrated folder on specifications for rack anchor bolts and accessories. It includes about twenty detail drawings. Ask the nearest Bethlehem office to mail you a copy.

BETHLEHEM STEEL



White F-10 COMPOUND KETTLE

... FOR LOWER COST **MELTING OF JOINT** COMPOUNDS



heating of compounds that are damaged by high temperatures.

FOOLPROOF manual burner adjustment

LOW COST of \$998 f.o.b. factory, complete with two thermometers (one for heating-jacket oil, one for compound), manual agitator, oil burner, steady rest, towing eye, tires Engine agitator or propane heating available

CAPACITY: 120 gallons of compound

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Don't take chances with make-shift rigs.



load fast! load safely! with MILLER Tilt-Top



Make-shift, "home-welded" truck platforms, or "jerry-built" trailer rigs may seem like a cheap way to haul . . . but they can be plenty expensive when something gives way under several thousand pounds of equipment. Just one slip . . . could cost you much more than a ruggedly built MILLER Tilt-Top. On any model you choose — its big, broad platform merges with the ground for the fastest, safest, drive-on loading you've ever tried. Available in a variety of single and tandem axle models from 3 to 13 ton capacities . . Miller Tilt-Tops also offer a wide range of platform sizes . . . all decked with tough, traction sure, 2" oak. Don't take chances loading expensive equipment or risking serious personal injury on make-shift rigs . . . be fast, be safe with a MILLER Tilt-Top!

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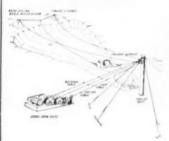


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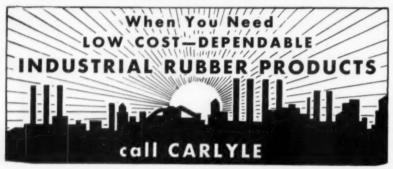
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We're giving the United Way
How about you?



Contractors know a nut and bolt assembly is only as strong as its washers. That's why in high strength structural steel bolting, quality-conscious consulting engineers and contractors demand washers that match the best nut-and-bolt assemblies in . . .

- 1. High tensile strength
- 2. Holding power
- 3. Uniformity

On all three counts, Mil-Carb Carburized Washers fill the bill best—developed specifically by the world's largest producer of washers to meet the needs of modern structural steel jointing. Mil-Carb Washers are fabricated from prime carburizing quality special soundness steel to insure strength to equal or exceed the rigid specifications of ASTM designation A-325.

Maximum holding power is assured by a closely supervised carburizing process which retains inner ductility of the met-

al, yet provides an exceptionally hard "outer skin". It's this tough "outer skin" which permits torquing nuts to specification maximums without danger of "galling" or grinding of the washer . . . imperative for permanent, uniformly strong, tight joints!

In addition, Mil-Carb Washers are uniformly flat and smooth with dimensions conforming to current requirements for heavy plain washers (carburized) of the American Standards Association (ASA Designation: B27.2).

For permanently strong, tight joints that become integral parts of the steel structure... as permanent as the steel itself... specify Mil-Carb Carburized Washers. Available in six sizes, from \(\frac{\pi}{a} \)", packed in 200-lb. kegs.

Distributed by Leading Bolt and Nut Manufacturers and

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The World's Lorgest Fraducer of Washers
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affords machine parts and bearings real protection against rust and corrosion. It is a grease type lubricant that possesses the utmost in water and acid resistance. It has exceedingly high film strength. Due to the marked adhesiveness and water resistance of LUBRIPLATE 130-AA, it does not wash off readily, hence is the ideal lubricant in the presence of moisture.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY. LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

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COMME!

BUTLER ENGINEER

. . of "Stenographer's Fanny"-an Occupational Hazard

NOT that your Butler Engineer has made a study of "stenographer's fanny" - but after sitting in planes for thousands of miles, hour after hour lately, the weary, stiff and sore muscles in my own fundament - make me think that stenos seated for 8 hours a day must suffer similarly. Not only that, but if I put a tape measure around that anatomical area I'm sure I have gained a good 2 inches. I have no data on stenos, so further the deponent saith not.

What occasioned all this air travel? Well, a great many people do follow our suggestion to "call in the Butler Engineer."

I'm happy about it. Very! You see, to get full advantage for a Ready-Mix operator installing a new plant — field engineering, the evaluation of terrain, site location, transportation and a host of other factors by the Butler Engineer often means a much sweeter profit for the Butler customer. So I travel

By the way, we are bringing out what is probably the world's most portable Ready-Mix plant which provides production that can match that of good sized permanent plants. More about this later. It's important!

Just to add another to the long succession of plaintive pleas your Butler Engineer has been uttering for years, please Mr. Ready-Mix operator, put in enough compartments in your new plant. It always is so easy at the start.

Take good care of yourself.

The Butler Engineer

BUTLER BIN COMPANY WAUKESHA, WISCONSIN



Lifetime protection from moisture for pennies!

When you consider the benefits it confers on a building, the cost of VISQUEEN film for a moisture barrier under concrete slabs and basement floors is negligible. Despite the fact that it will last as long as the structure it protects, the material is inexpensive to buy. Labor savings that derive from its seamless widths up to 32 feet, its light weight, and ease of handling (20 lbs. per 1000 sq. ft. .004" thickness) in many cases offset the purchase price.

Investigate this material! Compare the advantages—dry floors that stay dry for life, concrete that will take *all* types of flooring, no cracking from moisture penetration. Write today for specification data, or clip and mail the information request tag.



VISQUEEN film is all polyethylene, but not all polyethylene film is VISQUEEN. Only VISQUEEN has the benefit of research and resources of VISKING COMPANY.

PLASTICS DIVISION
VISKING COMPANY Division of
P.O. Box 1410, TERRE HAUTE, INDIANA
IN CANADA: Visking Limited,
Lindsay, Ontario.



Methods Memo...



Gas Overcomes Bridge Workers

One man was killed and seven hospitalized in downtown Pittsburgh when pile driving operations for a bridge job broke open a 20-in. gas main and caused natural gas to seep into a nearby manhole.

Piling was being driven for the new Fort Pitt Bridge across the Monongahela River when it broke open a main 15 ft underground parallel to the south bank of the river.

Gas seeped into a nearby manhole and overcame a construction crew foreman who was checking valves. Several workers and firemen who attempted a rescue also were overcome.

Police and firemen fought time and a traffic jam involving more than 50,000 cars to pull the victims from the hole. They administered oxygen, loaded the men into ambulances, and rushed them to the hospital. One man was dead when brought to the surface. Safety equipment manufactured by Mine Safety Appliances Co. helped in the rescue and revival of the victims.

Contractor Rescues Plane From Swamp

Raising a \$1.5-million airplane that crash-landed in a marshland near New York City proved a real ticklish operation for a New Jersey marine contractor.

Gates Bros. of Little Ferry, had to find a way to bring construction equipment up to the plane that sat in just a few feet of water. Gates' answer was to dredge a 250-ft-long channel 65 ft wide and 6 ft deep up to the aircraft. This was done with a 10-in. Ellicott Dredge. The channel permitted floating a 100-ft barge and derrick equipment up to the plane.

At the plane, the contractor filled the barge with

water, sinking it. Again the dredge was put to use. This time it pumped 1,000 yd of sand between the plane and the barge to form a ramp.

Using the plane's wheels as a dolly, and with the help of the waterborne derrick, the plane then was pulled up over the ramp and onto the barge. Once the plane was secured, water was pumped from the barge raising both plane and barge to the top. Both then were floated away to nearby Idlewild airport where attempts will be made to reclaim the valuable plane.

Construction Stiffs Give a Church

Close to 100 workmen on the \$27-million Grasse River Lock at the St. Lawrence Seaway are donating their time to help build a Baptist Church in Massena. Five faiths are represented as well as a number of workmen who stoutly maintain they've never been inside a church in their lives.

Some of the men work on the church in late afternoons after being on the job all day. Others, with night jobs, turn up during the day for a few hours before going on the job. The foundation now is complete and it is expected that the church will be opened in about a month.

Indians Help Open Will Rogers Pike

Tribal dances staged by Oklahoma Indians touched off opening day ceremonies of the nation's newest turnpike, the 88-mi-long Will Rogers Pike connecting Tulsa, Okla., and Joplin, Mo.

Will Rogers Pike is the latest link in the growing toll road network that someday may run the entire width of the continent. Nearly 2,000 miles of the trans-continental super-highway now is in operation.

Who Needs an Engineer?

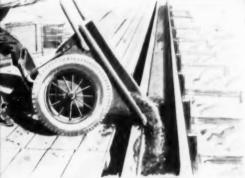
You want a bridge? Just build one. That's what nine Cibola, Ariz., farmers did when they decided they needed a bridge to haul crops across the Colorado River.

Of course, the law says they should have had the approval of the Army Corps of Engineers, the Secretary of the Army, the Bureau of Reclamation, the California Division of Highways, the California Toll Bridge Authority, and the Arizona Highway Department. But the farmers just ignored all that red tape.

They went ahead and built the 401-ft span at a cost of \$50,000 across the river without asking anybody's permission. They haul their own crops across free and charge other users a toll. That's to help pay for it.

The bridge is located about 20 mi south of Blythe, Calif., and about 40 mi north of Yuma, Ariz. The nine who built it farm on the Arizona side of the river.

guide to BETTER CONCRETING*



Correct placing methods result in a better job

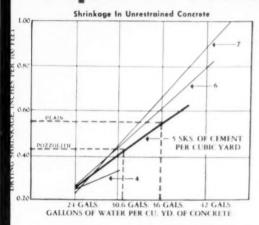
correct placing is important

Much of the time and money spent for patch-up can be saved by placing concrete carefully. Concrete should be dropped vertically into forms to avoid separation, caused by striking the side and bouncing off, and resulting in stone pockets and sand streaking.

A placard entitled "Do's and Don'ts of Concrete Placing" illustrates and describes the above and other important points. Copies available for posting at job sites or on bulletin boards.

*From booklet by this name. Covers points that can make the difference between a good job and a poor one. Copy on request.

a quiz on CONCRETE



Question: How can minimum shrinkage be obtained?

Answer: Whatever the cement content of a mix or the water-cement ratio, drying shrinkage is governed mainly by unit water content—the amount of water required per cubic yard of concrete.

Because Pozzolith is key to the lowest possible unit water content for a given workability it provides minimum shrinkage...also improves other basic qualities in the hardened state.

For uniform, better quality concrete, always specify Pozzolith Ready-Mixed Concrete—available from your local ready-mix producer.



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Division of American-Marietta Company

Cleveland 3, Ohio-Toronto 9, Ontario

Cable Address, Mastmethod, N. Y.

POZZOLITH EMPLOYED FOR IMPROVED CONTROL OF CONCRETE QUALITY



existiff Ready-Mixed Concrete makes available west possible unit water content for a given account of the concrete construction and other concrete construction.



With Pozzolith Ready-Mixed Concrete, control of rate of hardening gives desired handling and finishing time under widely varying job conditions... for slab and other concrete work.



Control of entrained air, another feature of Pazzalith Ready-Mixed Concrete, provides optimum air content without sacrificing other qualities, for sewage plants and other exposed concrete.

ANNOUNCING! Increased capacity ratings for Timken bearings

THE Timken Roller Bearing Company announces an increase in the capacity ratings of most series of Timken* tapered roller bearings. Increases range up to 39%. Most are in the neighborhood of 10%. Some are negligible.

Permits Use of Smaller Bearings

This increase in capacity ratings makes it possible for many of you to use smaller bearings. Your products can be made more compact. You can save weight. You may be able to reduce the size of your shafts and housings. And you may be able to use Timken bearings in new applications where they have not been practicable in the past.

3 Reasons for Increases

What led to these increases in Timken bearing capacities? Three things:

First, a careful review of more than 6,000 different laboratory studies of Timken bearing performance on fatigue life machines. From these exhaustive studies, conducted on an organized, scientific basis since 1924, we keep learning more and more about predicting bearing life.

Second, refinement in the method of analyzing these studies mathematically.

Third, a careful review of the life of millions of Timken bearings in the field.

How Much Can This Save You?

To find out how the new capacity ratings affect the types and sizes of Timken bearings in which you are interested, call your Timken bearing representative or write our Engineering Department. We'll be glad to work with you at the drawing board stage. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



TIMKEN

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